EDITOR:
ASSOC. PROF. GÜLBIN KONAKÇI

SAMPLE LITERATURE REVIEWS FROM DIFFERENT AREAS OF NURSING SCIENCE

BZT TURAN

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In 2018, she transitioned to Izmir Democracy University Faculty of Health Sciences, Department of Nursing, Department of Internal Medicine Nursing as an assistant professor, and she attained the rank of associate professor in 2023.

A founding member of the Türkiye Emergency Nurses Association (TENA), she has been serving as its President since 2019.

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Preface

In this publication, we aimed to include reviews with a different approach, apart from the stereotypical book chapters ranging from historical process to current knowledge. Book chapters may appeal to a wider audience, such as students, professionals or general readers. Whereas we focused on review samples prepared for a specialized academic or research audience to identify needs to information and point out new research areas. For this reason, review studies from different fields of health sciences are presented, and we anticipate that many research topics will emerge from this mini book.

With my eternal gratitude to all our health workers.

Assoc. Prof. Gülbin KONAKÇI

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İÇİNDEKİLER

CHAPTER 1

NONALCOHOLIC FATTY LIVER DISEASE AND DIABETES: INTERACTION OF TWO METABOLIC PROBLEMS

Merve GÜNBAŞ[1]

Dilek BÜYÜKKAYA BESEN[2]

Introduction

Non-alcoholic fatty liver disease (NAFLD) is common among chronic liver diseases and is estimated to affect 25% of the global population (Younossi et al., 2016). The prevalence rate among children has been reported to be around 10% (Schwimmer et al., 2006). Fatty liver disease has been mentioned since the 1800s, but it was defined as Nonalcoholic Steatohepatitis (NASH) by Ludwin in 1980 due to the presence of signs of fatty liver disease despite not drinking alcohol. Since fatty liver disease is considered as a disease on its own and does not include hepatitis findings, a new definition has been made today and Non-Alcoholic fatty Liver Disease (NAFLD) has entered the literature (Ludwig et al., 1980). In other words, it is defined as an increase in lipid content in the liver despite the absence of a

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secondary condition that causes fat storage in the liver. Considering that NAFLD is associated with some metabolic diseases, a new term, metabolic-associated fatty liver disease (MAFLD), was proposed in 2020 to better explain the etiology of NAFLD. MAFLD is a condition in which hepatic steatosis is accompanied by obesity, diabetes and metabolic dysregulation. In a meta-analysis of 395 studies, it was reported that 364 studies investigated T2D in NAFLD patients, while 42 studies investigated MAFLD (Cao et al., 2024). The development of NASH can be explained in two stages. Firstly, fat accumulation in the liver that causes insulin resistance, and secondly, changes such as cytokine damage and hyperinsulinaemia that provide oxidative stress and oxidation of fatty acids in the liver. The increase in fat mass causes insulin resistance. Insulin resistance, infectious pathologies leading to fatty liver disease, medications used, some chronic diseases may cause the development of NAFLD (Abd et al., 2015). (Fig 1.) Fibrosis in steohepatitis may progress to cirrhosis. Cirrhosis may increase the risk of hepatocellular carcinoma. The risk of carcinoma is higher in individuals with diabetes (Williams et al., 2013). Considering these conditions, NAFLD is no longer seen as an innocent picture and individuals with diabetes should be especially careful.

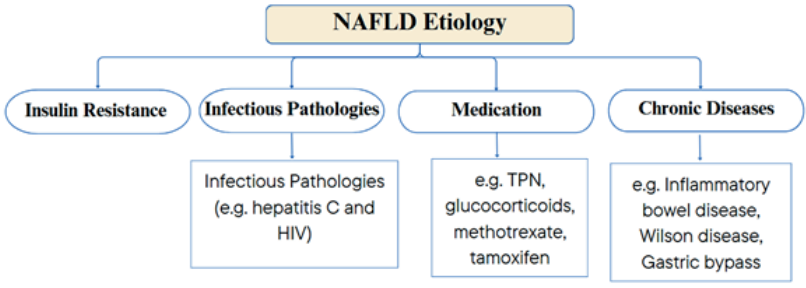

Figure 1. NAFLD Etiology

Pathophysiology

The pathogenesis of NAFLD is not fully understood. The basis of its onset is the disturbance of the balance in triglyceride synthesis, destruction or removal from the liver. In this period, lipotoxicity causing hepatocyte damage initiates inflammation. In the presence of insulin

resistance, lipase in adipose tissue is activated and triglycerides are broken down into glycerol and free fatty acids (Lomonaco et al., 2011). With the accumulation of triglycerides in the liver, fat accumulation in the liver occurs with the dysregulation of fatty acid metabolism causing obesity and steatosis. This condition not only causes the development of diabetes, but also disrupts the regulation of glucose values in patients diagnosed with diabetes, and may cause the early development of late diabetes complications such as cardiovascular diseases and renal failure (Akalın, 2016). In the second development, cirrhosis and fibrosis may develop in patients by causing hepatocyte inflammation and necrosis (Abd et al., 2015).

Relationship Between NAFLD and Type 2 Diabetes

NAFLD, a common metabolic syndrome, is commonly seen in patients with type 2 diabetes (T2D). According to studies, NAFLD is seen in more than 60% of diabetic patients. It is estimated that 40-70% of T2D individuals have underlying NAFLD (Dharmalingam and Yamasandhi, 2018). In a meta-analysis of NAFLD patients, the rate of T2D was found to be 69% and diabetes was reported to be among the strongest causes of NAFLD development compared to obesity, dyslipidaemia and hypertension (Younossi et al., 2016). NAFLD is closely associated with visceral adiposity, obesity, insulin resistance, type 2 diabetes and metabolic risk factors. Especially in western countries, NAFLD is increasing in association with obesity and metabolic syndromes (Juanola et al., 2021). It has been reported that 74% of obese individuals have fatty liver and the rate of NAFLD is 4.6 times higher in the obese population (Abd et al., 2015). NAFLD affecting T2D individuals includes individuals with liver disease ranging from hepatic steatosis, which occurs when alcohol intake does not continue and steatosis is absent, to steatohepatitis and cirrhosis. Steatohepatitis is a severe form of liver steatosis with inflammation and hepatocyte damage, leading to advanced liver cirrhosis and fibrosis. Although NAFLD is common in T2D individuals, it has been defined as a new complication, and recent studies have reported that hepatic steatosis is seen in more than 70% of T2D individuals in the United States (Ajmera et al., 2023).

Relationship Between NAFLD and Type 1 Diabetes

Type 1 diabetes is a chronic disease that develops as a result of an autoimmune disorder in beta cells in the islets of Langerhans of the pancreas and is more common in childhood and adolescence (Tar and Küçükoğlu, 2022). According to the data announced in 2022, it was reported that the number of individuals with type 1 diabetes worldwide was 8.75 million, and approximately 17% of them were under the age of 20. The annual incidence of type 1 diabetes increased by 2.8% globally and 3.9% in Europe (IDF, 2022). In a study, 62% of adults with type 1 diabetes were reported to be overweight and obese compared to 82% of T2D individuals (Fang et al., 2023).

Although insulin deficiency underlies type 1 diabetes, obesity can lead to insulin resistance, which adversely affects glycaemic control and may increase the risk of developing neuropathy, nephropathy and retinopathy in the long term. Insulin resistance can progress to NAFLD, NASH, cirrhosis and hepatocellular carcinoma (Klobučar et al., 2024). Although the prevalence of NAFLD and T2D is known, there are limited studies on its relationship with type 1 diabetes. While NAFLD is considered to be an important complication for T2D patients, the same situation is beginning to occur in patients with type 1 diabetes. Approximately 50% of patients with type 1 diabetes have obesity. In this case, it prepares the ground for the development of NAFLD. In a study, it was reported that the development of NAFLD in type 1 diabetics was more common in higher BMI, longer duration of diabetes, higher total insulin dose used and male gender (Salah et al., 2023).

In another study, 453 individuals with type 1 diabetes were examined and the prevalence of liver steatosis was found to be 29.5% and fibrosis 7.7%. It was reported that individuals with steatosis had a longer diagnosis of type 1 diabetes, higher insulin dose in 24 hours, higher BMI, higher CRP and triglyceride levels (Snethage et al., 2023). In another study, prevalence was determined in 832 individuals diagnosed with type 1 diabetes, and 61 individuals were reported to have NAFLD. It was found that the NAFLD group had higher BMI, glucose, triglyceride, ALT levels (Jıang et al., 2024). In the study by Lundholm et al., NAFLD was found in 61% of 447 individuals with type 1 diabetes, and it was reported that patients with obesity

and metabolic syndrome showed liver steatosis but not fibrosis. Liver imaging was performed in only 21% of patients, suggesting that NAFLD was overlooked (Lundholm et al., 2022).

NAFLD Therapeutic Approaches

Lifestyle Change

In the 20th and 21st centuries, urbanisation and modern life have led to the spread of unhealthy, sedentary lifestyles. In the last 25-30 years, NAFLD rates have increased with the increase in BMI and obesity. Lifestyle change, exercise and dietary modification, which are the first steps in T2D management, are also valid for NAFLD.

For NAFLD patients, weight management, healthy eating, and increased physical activity is the only globally accepted treatment method (Petroni et al., 2021). Although there is no clear evidence regarding the dietary pattern, non-carbohydrate-rich, low-carbohydrate ketogenic diets, Mediterranean type diet, vegetables, fruits, and legumes are recommended. Although high-protein diets provide rapid weight loss in the short term, they are not sufficient in the long term, so they are not recommended. A small weight loss of 3-5% may reduce steatosis, and weight loss of 7-9% may slow inflammation and 10% weight loss may slow the progression of fibrosis. (ADA, 2018; Lassailly et al., 2016). However, maintaining this weight loss is very important in the management of the disease. Achieving sustainable lifestyle change is even more difficult, especially in adult patients. Studies have reported that lifestyle change reduces BMI and improves NAFLD levels (Gepner et al., 2019; Wong et al., 2013). It has been reported that NAFLD improves with Mediterranean diet, avoiding snacks, avoiding alcohol, regular nutrition, reducing glucose intake, and increasing weight loss. It has been reported that NAFLD patients reduce visceral fat, whole-body fat, insulin resistance, blood pressure, anxiety, depression by doing physical activity; cardiorespiratory fitness, fat oxidation, energy levels, muscle strength (Hallsworth et al., 2019).

Pharmacological Approaches

NAFLD Use of Diabetes Pharmacotherapy

Because of the relationship between NAFLD and hepatic insulin resistance, the trial of drugs used in the treatment of diabetes has been brought to the agenda.

Metformin

Physiologically activated protein kinase activity reduces blood glucose levels by inhibiting hepatic glucose production through reduction of intestinal glucose absorption. It is used as a first-line agent in the treatment of T2D. Metformin is used in treatment because it improves insulin resistance which is in the pathogenesis of NAFLD. In animal experiments, it has been reported that metformin treatment improves fatty liver disease, reduces hepatomegaly and alanine aminotransferase (ALT) level in insulin-resistant mice with hepatic steatosis (Song et al., 2015).

In studies, it was reported that metformin improved BMI, liver function and insulin resistance, but did not affect the histological size of NAFLD (Rakoski et al., 2010; Lavine et al., 2011). In a study of 1292 diabetic individuals, it was reported that metformin treatment worsened liver fibrosis but improved hepatic steatosis (Turner, 1998). Considering all these results, metformin is not recommended in the treatment of NAFLD in the latest guidelines (Cusi et al., 2022).

Pioglitazone

Pioglitazone decreases free fatty acid levels through adipogenesis, increases insulin sensitivity in liver and skeletal muscle cells, increases peripheral glucose uptake and decreases hepatic glucose output (Waugh et al., 2006). In animal experiments, pioglitazone use has been shown to improve NAFLD level by improving steatosis and fibrosis (van der Veen et al., 2016; Kalavalapalli et al., 2018). In a study of 55 patients with T2D and impaired glucose tolerance, 6-month pioglitazone treatment was reported to improve insulin sensitivity, ALT levels, steatosis, liver biopsy, and inflammation in NASH patients (Belfort et al., 2006). Pioglitazone is used as first-line treatment in patients with NASH and T2D, but caution should be exercised in its use in

NAFLD individuals without T2D. Specialists should be cautious about adding it to treatment due to side effects such as weight gain, fluid retention, congestive heart failure, bladder cancer and bone loss (Shah and Mudaliar, 2010).

GLP-1 Receptor Agonists (RA)

GLP-1 is an incretinic hormone found in the intestine, alpha and beta cells of the pancreas and the central nervous system. Its main function is to increase insulin secretion from beta cells in response to hyperglycaemia and decrease glucagon secretion from alpha cells. It slows down gastric emptying and bowel movements to decrease glucose absorption and tries to stop the postprandial glucose increase. In addition to providing glucose control in T2D treatment, it provides prevention of diseases such as myocardial infarction and CVO, which are complications of diabetes. Ensuring weight control is the basis of NAFLD treatment. GLP-1 RA has been reported in studies to reduce body weight by 2-7 kg with effects such as delaying gastric emptying, early satiety, decreased appetite (Boer et al., 2016; Kelly et al., 2020). The positive effect of the use of Liraglutide from the GLP-1 RA group in NAFLD is weight loss. It is not recommended for routine treatment. Semaglutide, another GLP-1 analogue, has been reported to have promising results in the treatment of NASH, but studies are ongoing (Nevola et al., 2023).

Statins

It was thought that the use of statins would reduce cardiovascular risk in case of the development of conditions that damage the cardiovascular system such as NASH and diabetes, and that their use may be beneficial due to their anti-inflammatory and antioxidant effects. In experimental studies, it has been reported that NAFLD may prevent the progression from simple steosis to fibrosis and NASH with its anti-inflammatory, anti-thrombotic and anti-fibrotic effects in addition to reducing cardiovascular risk. In randomised controlled trials, it has been reported to reduce portal hypertension in advanced stage patients such as cirrhosis (Wang et al., 2013). In the study, it was reported that statin use did not cause an increase in the risk of hepatotoxicity and the results were generally favourable, but there is no clear evidence of their hepatoprotective effects. Therefore, it is not recommended to use

statins routinely in the treatment of NASH/NAFLD, and it has been reported that they can be used to protect cardiovascular risk in diabetic patients with lipid disorders (Ayada et al., 2023).

Conclusion

NAFLD is not a condition that occurs alone but is a part of metabolic disorders such as obesity, high energy intake, sedentary life, insulin resistance and diabetes. The incidence of NAFLD and T2D is increasing day by day. The presence of T2D increases the risk of developing NASH and fibrosis compared to NAFLD without T2D. Evidence suggests that NAFLD develops before T2D. Therefore, preventing NAFLD and managing it effectively will help to prevent the development of T2D in the future. Some patients with NAFLD may develop liver cirrhosis and hepatocellular casinoma, but these are not the primary outcomes. This picture is seen in some of the patients who develop NASH. One of the main causes of death in NAFLD is cardiovascular causes. In addition, the risk increases even more with the addition of T2D. In clinical practice, there is not yet a method to easily treat NAFLD and NASH. Our priority is to prevent the development of this picture with lifestyle changes.

References

Abd El-Kader, S.M., & El-Den Ashmawy, E.M. (2015). Non-alcoholic fatty liver disease: The diagnosis and management. *World Journal of Hepatology,* 7(6), 846–858.

Ajmera, V., Cepin, S., Tesfai, K., Hofflich, H., Cadman, K., Lopez, S., Madamba, E., Bettencourt, R., Richards, L., Behling, C., Sirlin, C. B., & Loomba, R. (2023). A prospective study on the prevalence of NAFLD, advanced fibrosis, cirrhosis and hepatocellular carcinoma in people with type 2 diabetes. *Journal of hepatology*, *78*(3), 471–478.

Akalın, A. (2016). Diabetes and non-alcoholic fatty liver disease. Turkiye Klinikleri Journal of Internal Medicine, 1(2), 91–98.

American Diabetes Association. (2018). 4. Lifestyle management: Standards of medical care in diabetes—2018. *Diabetes Care,* 41(Supplement 1), S38–S50.

Ayada, I., van Kleef, L. A., Zhang, H., Liu, K., Li, P., Abozaid, Y. J., Lavrijsen, M., Janssen, H. L. A., van der Laan, L. J. W., Ghanbari, M., Peppelenbosch, M. P., Zheng, M. H., de Knegt, R. J., & Pan, Q. (2023). Dissecting the multifaceted impact of statin use on fatty liver disease: A multidimensional study. *EBioMedicine, 87*, 104392.

Belfort, R., Harrison, S. A., Brown, K., Darland, C., Finch, J., Hardies, J., et al. (2006). A placebo-controlled trial of pioglitazone in subjects with nonalcoholic steatohepatitis. *The New England Journal of Medicine, 355*(22), 2297–2307.

Cao, L., An, Y., Liu, H., Jiang, J., Liu, W., Zhou, Y., Shi, M., Dai, W., Lv, Y., Zhao, Y., Lu, Y., Chen, L., & Xia, Y. (2024). Global epidemiology of type 2 diabetes in patients with NAFLD or MAFLD: a systematic review and meta-analysis. *BMC Medicine,* 22(1), 101.

Cusi, K., Isaacs, S., Barb, D., Basu, R., Caprio, S., Garvey, W. T., Kashyap, S., Mechanick, J. I., Mouzaki, M., Nadolsky, K., Rinella, M. E., Vos, M. B., & Younossi, Z. (2022). American Association of Clinical Endocrinology clinical practice guideline for the diagnosis and management of nonalcoholic fatty liver disease in primary care and endocrinology clinical settings: Co-sponsored by the American Association for the Study of Liver Diseases (AASLD). *Endocrine Practice, 28*(5), 528–562.

de Boer, S. A., Lefrandt, J. D., Petersen, J. F., Boersma, H. H., Mulder, D. J., & Hoogenberg, K. (2016). The effects of GLP-1 analogues in obese, insulin-using type 2 diabetes in relation to eating behaviour. *International Journal of Clinical Pharmacy, 38*, 144–151.

Dharmalingam, M. & Yamasandhi, P.G. (2018). Nonalcoholic fatty liver disease and type 2 diabetes mellitus. *Indian Journal of Endocrinology and Metabolism,* 22, 421–428.

Fang, M., Jeon, Y., Echouffo-Tcheugui, J.B., & Selvin, E. (2023). Prevalence and management of obesity in U.S. adults with type 1 diabetes. *Annals of Internal Medicine,* 176, 427–429.

Fuhri Snethage, C., Meijnikman, A.S., de Groen, P., Callender, C., Rampanelli, E., Brouwer, C.B., van Raalte, D., Nieuwdorp, M., & Hanssen, N. (2023). 1313-P: The prevalences of NAFLD and liver fibrosis are high in individuals with type 1 diabetes and increase with disease progression. *Diabetes,* 72(1), 1313.

Gepner, Y., Shelef, I., Komy, O., Cohen, N., Schwarzfuchs, D., & Bril, N. (2019). The beneficial effects of Mediterranean diet over low-fat diet may be mediated by decreasing hepatic fat content. *Journal of Hepatology,* 71, 379–388.

Hallsworth, K., & Adams, L.A. (2019). Lifestyle modification in NAFLD/NASH: Facts and figures. *JHEP Reports: Innovation in Hepatology,* 1(6), 468–479.

International Diabetes Federation. (2022). *IDF Diabetes Atlas 2022 Reports*. Retrieved December 14, 2024, from https://www.diabetesatlas.org

Jiang, W., Huang, Q., Xu, W., Yan, J., Wang, C., & Yang, D. (2024). Prevalence, risk factors, and clinical characteristics of NAFLD in individuals with type 1 diabetes mellitus. *Diabetes,* 73(1), 1995–LB.

Juanola, O., Martínez-López, S., Francés, R., & Gómez-Hurtado, I. (2021). Non-alcoholic fatty liver disease: Metabolic, genetic, epigenetic, and environmental risk factors. *International Journal of Environmental Research and Public Health,* 18(10), 5227.

Kalavalapalli, S., Bril, F., Koelmel, J. P., Abdo, K., Guingab, J., Andrews, P., Li, W. Y., Jose, D., Yost, R. A., Frye, R. F., Garrett, T. J., Cusi, K., & Sunny, N. E. (2018). Pioglitazone improves hepatic mitochondrial function in a mouse model of nonalcoholic steatohepatitis. *American Journal of Physiology-Endocrinology and Metabolism, 315*(2), E163–E173.

Kelly, A. S., Auerbach, P., Barrientos-Perez, M., Gies, I., Hale, P. M., Marcus, C., Mastrandrea, L. D., Prabhu, N., Arslanian, S., & NN8022-4180 Trial Investigators. (2020). A randomized, controlled trial of liraglutide for adolescents with obesity. *The New England Journal of Medicine, 382*(22), 2117–2128.

Klobučar, S., Detel, D., Igrec, M., Bergoč, A., Rahelić, V., & Rahelić, D. (2024). Overweight and obesity in adults with type 1 diabetes: A growing challenge. *Diabetology,* 5(3), 234–245.

Lassailly, G., Caiazzo, R., Pattou, F., & Mathurin, P. (2016). Perspectives on treatment for nonalcoholic steatohepatitis. *Gastroenterology,* 150(8), 1835–1848.

Lavine, J. E., Schwimmer, J. B., Van Natta, M. L., Molleston, J. P., Murray, K. F., Rosenthal, P., et al. (2011). Effect of vitamin E or metformin for treatment of nonalcoholic fatty liver disease in children and adolescents: The TONIC randomized controlled trial. *JAMA, 305*(16), 1659–1668.

Lomonaco, R., Ortiz-Lopez, C., Orsak, B., Webb, A., Hardies, J., Darland, C., et al. (2011). Effect of adipose tissue insulin resistance on metabolic parameters and liver histology in obese patients with nonalcoholic fatty liver disease.

Ludwig, J., Viggiano, T.R., McGill, D.B., & Oh, B. (1980). Nonalcoholic steatohepatitis: Mayo Clinic experiences with a hitherto unnamed disease. *Mayo Clinic Proceedings,* 434–438.

Lundholm, M.D., Bena, J.F., Zhou, K., Tsushima, Y., & Kashyap, S. (2022). 1104-P: Prevalence and clinical determinants of nonalcoholic fatty liver disease by liver scores in adults with T1DM. *Diabetes,* 71(1), 1104–P.

Nevola, R., Epifani, R., Imbriani, S., Tortorella, G., Aprea, C., Galiero, R., Rinaldi, L., Marfella, R., & Sasso, F. C. (2023). GLP-1 receptor agonists in non-alcoholic fatty liver disease: Current evidence and future perspectives. *International Journal of Molecular Sciences, 24*(2), 1703.

Petroni, M.L., Brodosi, L., Bugianesi, E., & Marchesini, G. (2021). Management of non-alcoholic fatty liver disease. *BMJ,* 372, m4747.

Rakoski, M., Singal, A., Rogers, M., & Conjeevaram, H. (2010). Meta-analysis: Insulin sensitizers for the treatment of non-alcoholic steatohepatitis. *Alimentary Pharmacology & Therapeutics, 32*(10), 1211–1221.

Salah, T., Tomah, S., Al-Badri, M., Kibaa, K., Dhaver, S.E., Curry, M.P., Lai, M., Jiang, Z., Khater, A., McCarragher, R., DeMattos, L., Tran, M., & Hamdy, O. (2023). Prevalence of nonalcoholic fatty liver disease and liver fibrosis in patients with type 1 diabetes. *Diabetes,* 72(1), 1261.

Schwimmer, J.B., Deutsch, R., Kahen, T., Lavine, J.E., Stanley, C., Behling, C. (2006). Prevalence of fatty liver in children and adolescents. *Pediatrics,* 118:1388–1393.

Shah, P., & Mudaliar, S. (2010). Pioglitazone: Side effect and safety profile. *Expert Opinion on Drug Safety, 9*(2), 347–354.

Song, Y. M., Lee, Y. H., Kim, J. W., Ham, D. S., Kang, E. S., Cha, B. S., & et al. (2015). Metformin alleviates hepatosteatosis by restoring SIRT1-mediated autophagy induction via an AMP-activated protein kinase-independent pathway. *Autophagy, 11*(1), 46–59.

Tar, E. & Küçükoğlu, S. (2022). The diagnosis process of a child and their family with type 1 diabetes according to Pender's health promotion model: A case presentation. *Turkish Journal of Diabetes Nursing, 1*(1), 32–37.

Turner, R. C. (1998). İngiltere prospektif diyabet çalışması: Bir inceleme. *Diabetes Care, 21*(Suppl 3), C35–C38.

van der Veen, J. N., Lingrell, S., Gao, X., Quiroga, A. D., Takawale, A., Armstrong, E. A., Yager, J. Y., Kassiri, Z., Lehner, R., Vance, D. E., & Jacobs, R. L. (2016). Pioglitazone alleviates hepatic inflammation and fibrosis in mice lacking phosphatidylethanolamine N-methyltransferase. *American Journal of Physiology-Gastrointestinal and Liver Physiology, 310*(7), G526–G538.

Wang, W., Zhao, C., Zhou, J., et al. (2013). Simvastatin ameliorates liver fibrosis via mediating nitric oxide synthase in rats with non-alcoholic steatohepatitis-related liver fibrosis. *PLoS ONE, 8*, e76538.

Waugh, J., Keating, G. M., Plosker, G. L., Easthope, S., & Robinson, D. M. (2006). Pioglitazone: A review of its use in type 2 diabetes mellitus. *Drugs, 66*(1), 85–109. Erratum in: *Drugs, 66*(3), 340–341.

Williams, K.H., Shackel, N.A., Gorrell, M.D., McLennan, S.V., & Twigg, S.M. (2013). Diabetes and nonalcoholic fatty liver disease: a pathogenic duo. *Endocrine Reviews,* 34(1), 84–129.

Wong, V. W., Chan, R. S., Wong, G. L., Cheung, B. H., Chu, W. C., & Yeung, D. K. (2013). Community-based lifestyle modification programme for non-alcoholic fatty liver disease: A randomized controlled trial. *Journal of Hepatology, 59*(3), 536–542.

Younossi, Z.M., Koenig, A.B., Abdelatif, D., Fazel, Y., Henry, L., Wymer, M. (2016). Global epidemiology of nonalcoholic fatty liver disease—meta-analytic assessment of prevalence, incidence, and outcomes. *Hepatology,* 64(1):73–84.

CHAPTER 2

POSTGRADUATE RESEARCH ON TRANSPLANTATION IN THE FIELD OF NURSING IN TURKEY: A SCOPING REVIEW

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Özge İŞERİ[3]

1. Introduction

Organ transplantation is the transfer of an organ from a living or deceased donor to replace a severely damaged organ that can no longer function due to end-stage failure (Bounader and Flécher, 2024; Zhang et al., 2024). According to 2023 data, over 46,000 transplants were performed worldwide (https://www.organdonor.gov/learn/organ-donation-statistics), while more than 3,800 organ transplants are performed annually in Turkey (https://organkds.saglik.gov.tr/DSS/PUBLIC/Transplant_Solid_Organ.aspx).

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The developmental process of organ transplantation has progressed in parallel with nursing studies. The first study on this topic was published in The Lancet in 1968, describing nurses' experiences with kidney transplantation (Uslu, Hatipoğlu, Ordin and Karataş, 2024). The first successful transplant in Turkey was a live donor kidney transplant performed in 1975 (Uslu et al., 2024). The first publication from Turkey was a presentation on the Turkish Society of Dialysis and Transplantation Nursing at an international congress (Hatipoğlu, Özgürer, Arık, Tokat and Eldemir 1978). Over time, the number of nurses working in organ transplantation, the research conducted, and the presentations delivered have steadily increased, with many publications emerging alongside postgraduate education (Uslu et al., 2024).

Nurses are known to play an active role in every stage of organ transplantation (Zhang et al., 2023). In particular, the guidance role that nurses undertake is crucial in preventing complications and promoting health (Hamid et al., 2022; Koraş, 2021). This role includes providing information that helps maintain individuals' daily activities at an optimal level and improves their quality of life, with this information being appropriately communicated to patients and their families (Hamid et al., 2022; Koraş, 2021). Thus, nurses focus on enhancing patients' and families' adaptation and facilitating behavioral changes by being involved in every stage of care (Hatipoğlu, Karayurt, Sarıgöl and İşeri, 2017; Robles et al., 2023). Parallel to this, studies aimed at improving the quality of life of family members are also being conducted (Zhang et al., 2023; Liu et al., 2021).

In addition to these roles, transplant nurses are responsible for preserving the function of the transplanted organ, maintaining donor health, ensuring postoperative rehabilitation of both the recipient and the donor, coordinating interdisciplinary care, and conducting research to advance scientific knowledge (Uslu et al., 2024; Robles et al., 2023). Throughout all these tasks, nurses must use evidence-based practices (ITNS-ANA-2009; Sarıgöl, Karayurt, Ertan, Duman and Yıldız, 2023). A randomized controlled trial compared care provided by nurses knowledgeable in evidence-based practices with traditional nursing care and found that evidence-based care significantly reduced patients' ICU and hospital stays, reintubation rates, and complication rates while improving survival rates (Hu and Lie, 2024). A review also noted that

early complications require specialized nursing care in intensive and clinical care units, while long-term outcomes involve comprehensive discharge education and home care processes (Sarıgöl et. al., 2023). Thus, delivering quality care is only possible by staying updated with current and evidence-based research (Can and Özdemir, 2023). In this context, review studies are at least as clinically important as experimental research and evidence-based recommendations (Kolaski, Logan, and Ioannidis; 2023).

The literature contains numerous reviews on organ transplantation (Bağcı, Yücel and Eroğlu, 2021; Hatipoğlu et al., 2017). These reviews address the history of organ transplantation globally and in Turkey, the first scientific publications on transplant nursing, and postgraduate education (Bağcı et al., 2021; Hatipoğlu et al., 2017). However, no prior research has been identified that examines nursing theses in the field of transplantation from a scoping perspective. The results of this study are expected to contribute to both the scientific and clinical practice of organ transplant nursing.

2. Methods

2.1. Aim

This study aims to examine and map nursing theses conducted on transplantation in Turkey. The research questions are as follows:

1. What types of research methods have been used in theses on transplantation nursing?
2. What findings have been obtained from the results of theses on transplantation nursing?

2.2. Design

This scoping review was conducted by the Joanna Briggs Institute Methodology for Scoping Reviews (Peters et al., 2021).

2.3. Search Strategy

The YÖKTEZ database, where all theses in Turkey are officially published, was used for this research (https://tez.yok.gov.tr/

UlusalTezMerkezi/). Data were obtained by reviewing postgraduate theses in the field of nursing. The keywords used for the search were "transplantation," "graft," "organ transplantation," "tissue transplantation," "organ transplantation nursing," and "transplantation nursing." The full search strategy is detailed in Figure 1. Quantitative and qualitative studies published without a time limit up to September 5, 2024, were included in the study. Theses without bibliographic information, those with inaccessible full texts, those conducted on animal transplantation, and those outside the nursing department were excluded.

2.4. Data Extraction

Data were extracted from the included articles. According to the inclusion criteria, three researchers reviewed and screened all articles based on their titles, then abstracts, and finally full texts. Clarifications were discussed and agreed upon among the co-authors. No protocol exists for this review.

2.5. Quality Assessment

Since we aimed to provide a general overview of the existing studies, a critical appraisal of the included studies was not performed.

2.6. Data Analysis/Synthesis

This study revealed the authors, publication years, research topics, types of studies, sample sizes, data collection tools, and main findings of the theses. The review was categorized under two headings: doctoral and master's theses. This scoping review was conducted by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for scoping and review studies (Page et al., 2021).

2.7. Ethics

The research is a literature review model; therefore, it has no direct impact on humans and/or animals. In this context, an ethics committee approval decision was not deemed necessary. All included studies are cited in the reference section.

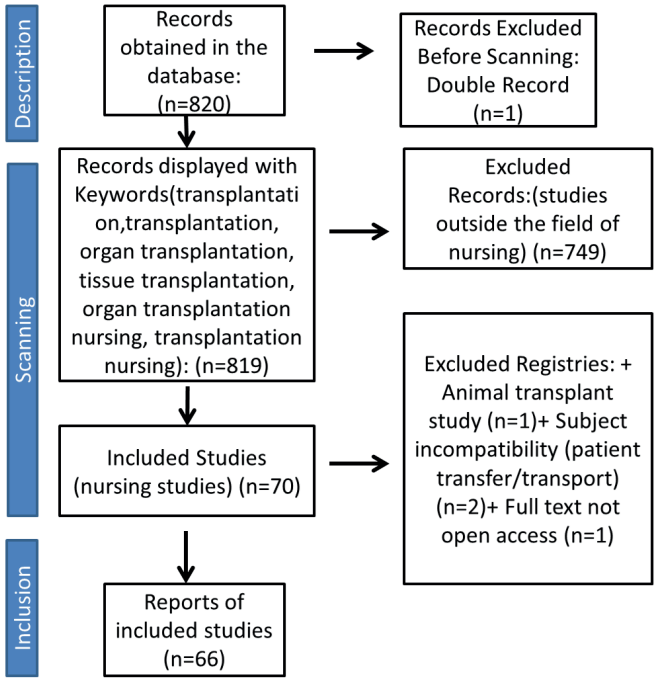

Figure 1. Thesis Selection Flow Diagram

3. Findings

A keyword search resulted in the identification of 820 articles. Among these, 66 articles were included in the scope determination review. The search results are presented in the flow diagram (Figure 1). The publication years range from 1995 to 2023, with the majority of articles published after 2012 (80%). An analysis of the research methods used in the articles revealed that most studies were descriptive (77%), and only two studies employed a mixed-method design (0.03%). Quantitative research methods were predominantly used (93%), while only 12% of the studies were randomized controlled trials. It was determined that the use of randomized controlled trial methodology was more common in doctoral dissertations (37%). In 83% of the studies, validity and reliability-proven scales were preferred, with the SF-36 Quality of Life Scale being the most frequently used (40%). Additionally, 86% of the theses were master's studies, and the sample primarily consisted of patients (60%). It was found that 83% of the studies were conducted

in the postoperative period, focusing on patients' quality of life (30%), care needs (28%), psychological support needs (20%), medication adherence (18%), and challenges experienced (4%) during this period. The content analysis of the included studies is presented in Table 1.

3.1 Analysis Of Doctoral Theses In Terms Of Scope

Among the theses included in the study (n=9), 13% were at the doctoral level. The majority of these theses (n=8, 88%) were conducted on patients who had undergone solid organ transplantation. Most of the theses (n=3) were randomized controlled trials, while one employed a scale adaptation method. Two theses (22%, n=2) were quasi-experimental, with one also incorporating a qualitative method. Additionally, descriptive research (n=2), scale development (n=1), and exclusively qualitative (n=1) methods were also identified in doctoral theses. The experimental theses examined the effects of post-transplant education, support group interventions, and reflexology on symptom management and treatment adherence in transplant patients (Ergün, 2011; Başçı, 2023; Güzel, 2022). The quasi-experimental study by Ordin (2013) and the two-phase study (qualitative and quasi-experimental) by İşeri (2016) utilized the Roy Adaptation Model, a theoretical nursing framework. In the qualitative studies by Gündüz (2014) and İşeri (2016), individuals' experiences and needs were explored. In Ordin's (2013) thesis, the Turkish validity and reliability of the Modified Transplant Symptom Occurrence and Distress Scale were examined, while Özdemir's (2015) thesis focused on the development of an immunosuppressive medication adherence scale. The descriptive studies by Talas (2002) and Aksoy (2014) investigated the challenges and risk factors faced by patients after kidney transplantation.

3.2 Analyzing the Scope of Master's Theses

Among the theses reviewed in the study (n=57), 86% were master's theses. It was found that 91% (n=52) of these theses had patient individuals as their sample, with 94% (n=49) of these patients being transplant recipients. The majority of the theses (85%, n=49) were descriptive, while the other research types included qualitative research (n=4), randomized controlled trials (n=3), and a scale adaptation study (n=1). When analyzed based on the institutions where they were conducted, most theses (57%) were carried out in major cities with high

population density and established organ transplant centers, such as Ankara, Istanbul, and Malatya. Regarding sample characteristics, 80% (n=46) of the studies focused on patients who had undergone kidney and liver transplantation. Apart from these patients, other studies (n=10) included samples consisting of patients who had undergone stem cell and heart transplantation, while one study was conducted with intensive care unit nurses. It was observed that the majority of researchers (86%) preferred to use valid and reliable scales, with 29% specifically utilizing the SF-36 Quality of Life Scale. Additionally, 80% of the studies were conducted in 2012 or later.

Table 1. *Characteristics of the Theses Subjected to Scoping Review (n=66)*

Name, Year	Degree	Aim	Result	Materıal	Sample Size	Method
Kaçmaz, N.,1997	Master's Degree	Determining the psychological needs of patients before kidney transplantation	It was emphasized that nurses should determine approaches to patient problems.	*Data Collection Form * Psychological Needs Assessment Form	60	Descriptive research
Özşaker, E.,2002	Master's Degree	To assess the impact of anxiety and depressive symptoms on the quality of life of both renal transplant recipients and their families.	Individuals with depressive symptoms were found to have low quality of life.	*Personal Information Form * Quality of Life Scale * Beck Depression Inventory * Beck Anxiety Inventory	120	Descriptive research
Talas M.S., 2002	PhD Degree	Identifying the difficulties experienced by patients with kidney transplantation	In addition to having physiological, psychological, and socioeconomic difficulties, patients were also found to have insufficient knowledge to improve their quality of life.	*Personal Information Form *Data Collection Form	125	Descriptive research
Güler, S.,2003	Master's Degree	To define the knowledge of nurses working in the kidney transplantation unit about the care needs of patients	It was found that nurses' education level, professional and working time in the transplantation unit, receiving in-service training, and following publications positively affected their level of knowledge about the individuals they care for.	*Data Collection Form	53	Descriptive Research
Matrak, M., 2005	Master's Degree	Determination of physiologic problems experienced by patients undergoing allogeneic stem cell transplantation.	Pain, weakness in the vast majority of patients, fever, nausea, inability to eat, vomiting, It was found that mouth wound problems were observed and the incidence of symptoms increased as the length of hospitalization increased.	*Data Collection Form	51	Descriptive Research
Bozdemir, H., 2006	Master's Degree	To determine the quality of life in patients undergoing liver transplantation.	It was found that patients returned to normal life after the first three months and quality of life improved after the first year as a result of fewer complications such as acute rejection.	*Data Collection Form *SF-36 Quality of Life Scale	52	Descriptive Research

Aras, G., 2006	Master's Degree	Investigation of the problems, needs, and care participation levels of patients and families in liver transplantation.	A significant correlation was found between patients' and their families' post-transplantation expectations and their level of involvement in care.	*Data Collection Form	104	Descriptive Research
Özel, T.,2008	Master's Degree	To determine the relationship between the frequency of restless legs syndrome and sleep quality in renal transplant patients	Sleep quality was found to be lower in cadaveric transplants compared to living transplants. It was determined that the incidence of restless leg syndrome was not high in patients, but patients with this syndrome experienced impaired sleep quality.	*Data Collection Form * Pittsburgh Sleep Quality Scale	229	Descriptive Research
Sarıgöl, Y., 2008	Master's Degree	Investigation of quality of life and factors affecting it in the third month before and after liver transplantation	An analysis of quality of life based on the Nottingham Health Profile in liver transplant patients revealed a significant improvement in the sub-dimensions of "pain, energy level, emotional reaction, physical mobility, social isolation, and sleep" in the third month after CT compared to pre-transplant levels.	*Data Collection Form * Model for Estimating Liver Disease Severity (MELD) * Nottingham Health Profile	75	Descriptive Research
Cürcani, M., 2008	Master's Degree	To evaluate the impact of education provided to renal transplant patients on their quality of life, treatment adherence, and the psychological challenges they face.	After the training given to the patients, their quality of life, and compliance with treatment increased, and anxiety and depression decreased	*Data Collection Form *SF-36 Quality of Life Scale * Kidney Transplant Compliance Assessment Scale * Hospital Anxiety and Depression Scale	42	Randomized Controlled Trial
Yamantaş, Ö., 2010	Master's Degree	Investigation of quality of life of right lobe donors in liver transplantation	It has been found that early vital functions and activities of donors after right hepatectomy can affect quality of life.	*Data Collection Form *SF-36 Quality of Life Scale	63	Descriptive Research
Özdemir, S., 2010	Master's Degree	Determination of anxiety levels of donors and recipients in kidney transplantation	A significant relationship was found between state anxiety and trait anxiety of recipients and donors	*Data Collection Form * State-Trait Anxiety Scale	64	Descriptive Research

Ergün, G., 2011	PhD Degree	To determine the effect of counseling given to kidney transplant recipients from pre-operation to the 1st month after transplantation on their post-transplant compliance	It was determined that the depressive symptoms of patients receiving counseling decreased in the long term, anxiety levels decreased, and psychosocial adaptation and quality of life increased.	* State-Trait Anxiety Scale * Beck Depression Inventory * SF-36 Quality of Life Scale * Psychosocial Adjustment Self-Report Scale	74	Randomized Controlled Trial
Aydın, A., 2012	Master's Degree	To examine the emotional state of the family and future plans of patients waiting for kidney transplantation	Since the level of emotional expression perceived by the patients increased, the need for education was found to be important.	*Data Collection Form *Level Of Expressed Emotion (LEE) Ölçeği	154	Descriptive Research
Şahin, N., 2012	Master's Degree	Medication of patients after liver transplantation to examine their incompatibilities, their reasons, and their expectations from nurses	Non-adherence to medication after liver transplantation was identified as skipping doses, delaying doses, and taking incorrect medications.	* Semi-structured Interview Form	21	Descriptive Research
Oğuz, G., 2012	Master's Degree	Evaluation of symptoms and care needs in patients undergoing stem cell transplantation	It was determined that the patients experienced various symptoms in the post-discharge period and the patients who were hospitalized after discharge were hospitalized for reasons such as infection, Graft Versus Host Disease, fever, diarrhea, skin bleeding, bruising, and swelling. It was also found that individuals needed support and education on symptom control.	* Data Collection Form * Memorial Symptom Rating Scale	66	Descriptive Research
Ateş, Y.A., 2012	Master's Degree	To determine the care needs of patients undergoing kidney transplantation	It was found that patients' educational status and having different chronic diseases affected their quality of life and patients needed education. It was determined that they were satisfied that nurses respected privacy and were aware of the needs of individuals.	*Data Collection Form * Chronic Renal Failure Symptom Assessment Form * Chronic Renal Failure Clinical Findings Assessment Form * Newcastle Nursing Care Satisfaction Scale * SF-36 Quality of Life Scale	80	Descriptive Research

Demir, K.A., 2013	Master's Degree	Assessing fatigue and quality of life in heart transplantation candidate patients	Patients with the symptoms of fatigue It was found that energy level; pain, nausea-vomiting, fatigue, dyspnea, physical function, emotional function, mental function, social function, general function, and loss of appetite had significant relationships with each other, and general quality of life was affected.	*Data Collection Form * Visual Similarity Scale * European Cancer Treatment and Organization Committee Quality of Life Scale	97	Descriptive Research
Ordin, S.Y., 2013	PhD Degree	To analyze the adaptation of liver transplant patients using the Roy Adaptation Model, validate and assess the reliability of the modified Transplantation Symptom Occurrence and Discomfort Status Scale, and evaluate the impact of support group intervention on patients' knowledge levels, symptoms, and quality of life.	The scale was found to be valid and reliable in Turkish culture and can be used to determine the occurrence of symptoms and discomfort related to immunosuppressive drugs. It was determined that the support group intervention based on the Roy adjustment model positively affected the patients' adjustment in the areas of physiological, self-concept, and interdependence.	* Modified Transplant Symptom Occurrence and Discomfort Status Scale *SF-36 Quality of Life Scale * Semi-structured Interview Form	21+180	Randomized Controlled Trial
Altuntaş, T. 2013	Master's Degree	To determine the expectations of patients and their relatives waiting for liver transplantation and the difficulties they experience	During the process of waiting for liver transplantation, the most important expectation of the patients was to have a successful transplant surgery, and the most important expectation of the patient's relatives was to regain their patients' former health. Almost all of the patients reported physical problems and the majority of them reported psychological and socioeconomic difficulties related to activities of daily living.	*Data Collection Form	340	Descriptive Research
Aksoy, N.,2014	PhD Degree	To examine the risk factors causing failure in patients undergoing kidney transplantation for end-stage renal failure	It has been found that early detection of renal dysfunction and taking necessary measures is important in preventing loss of renal function, and chronic diseases can cause end-stage renal failure.	*Data Collection Form	393	Descriptive Research

Kisecik, Z., 2014	Master's Degree	Assessing the impact of parental depression levels on children's quality of life following hematopoietic stem cell transplantation.	Sociodemographic and disease characteristics of the child were found to affect the child's quality of life, sociodemographic characteristics of the parents were found to affect the level of depression, and the level of depression of the parents was found to affect the quality of life of the children.	*Data Collection Form * Quality of Life Scale for Children * Beck Depression Scale	82	Descriptive Research
Gündüz, Ç.S.E., 2014	PhD Degree	To identify the psychosocial problems of kidney transplant patients and to clarify their experiences during the transplant process	Before transplantation, it was determined that renal failure caused loss, hopelessness, and depression in patients; they were stigmatized by society; they had low self-esteem, negative body image, and fears related to transplantation and post-transplantation; organ transplantation meant a better quality of life, freedom and hope; after transplantation, difficulties such as drug use, social isolation, increased financial burden in the early period; fear in the long term, intense gratitude and guilt towards the organ donor, and life was perceived to be more qualified than before transplantation.	* Semi-structured Interview Form * Beck Depression Scale * Multidimensional Perceived Social Support Scale	15	Qualitative research
Yanar, M., 2015	Master's Degree	Analyzing the relationship between intolerance of uncertainty, hopelessness, and depression levels in patients and their relatives during the organ waiting process.	Both patients and their relatives were found to need professional psychiatric help	* Data Collection Form * Hopelessness Scale * Beck Depression Scale * Intolerance of Uncertainty Scale		Descriptive Research
Tamer, M., 2015	Master's Degree	Determination of quality of life after liver transplantation	It was found that the quality of life of the patients was at an intermediate level, and the quality of life of cadaveric transplant recipients was higher than living donor transplant recipients.	*Data Collection Form *SF-36 Quality of Life Scale	103	Descriptive Research
Özdemir, Z., 2015	PhD Degree	Development of the Adaptation to Immunosuppressive Drug Use Scale	The scale was found to be a valid and reliable scale	* Adherence to Immunosuppressive Drug Use Scale	200	Scale Development Study

Soylu, D., 2015	Master's Degree	Investigation of quality of life after kidney transplantation	It was found that most of the patients did not know the cause of failure and patients with tissue rejection had low levels of vitality and social function.	*Data Collection Form *SF-36 Quality of Life Scale	46	Descriptive Research
Güler, S., 2016	Master's Degree	To assess the quality of life, self-care capacity, and challenges faced by patients undergoing liver transplantation.	It was found that there was a strong positive correlation between the total self-care power score, quality of life physical health score, and mental health score, and those living far from the transplantation center experienced many physical, psychological, and social problems.	*Data Collection Form * Quality of Life Scale * Self-Care Power Scale * Immunosuppressive Therapy Compliance Scale in Organ Transplantation Patients * Modified Post Transplantation Symptom Occurrence and Discomfort Scale	38	Descriptive Research
Şahin, N., 2016	Master's Degree	To investigate adherence to post-transplantation immunosuppressive therapy in liver and kidney transplant recipients and the factors affecting it	Compatible organ transplant recipients were found to be older, had a higher total number of medications, had a higher rate of education on medication use, and had higher mental summary health scores compared to incompatible recipients.	*Data Collection Form *SF-36 Quality of Life Scale * Immunosuppressive Therapy Compliance Scale	310	Descriptive Research
İşeri, Ö., 2016	PhD Degree	To explain the information needs of living liver transplant recipients and to examine the effect of nursing interventions based on the Roy Adaptation Model on depression, anxiety, and quality of life of patients.	It was determined that the recipients had different information needs in each period of the perioperative period. In the quasi-experimental phase, it was determined that nursing interventions based on the model decreased the anxiety and depression levels of the patients and increased their quality of life and compliance.	* Patient Descriptive and Clinical Characteristics Form * Semi-structured Interview Form * Hospital Anxiety Depression Scale * SF-36 Quality of Life Scale	16+61	Quasi-Ex-perimental Research

Yaşar, N., 2016	Master's Degree	Assessing the quality of life and care needs of adult patients during the post-transplantation period following hematopoietic stem cell transplantation.	It was found that patients should be closely monitored in terms of possible negative effects on quality of life, nursing interventions, and education should be planned for symptom control, functional status should be improved and supported, emotional support should be given during the transplantation process and patients should be encouraged to make effective use of their free time, and patients should be kept in contact with family and friends during the neutropenic period and after discharge with alternative communication devices such as telephone to prevent social isolation.	* Quality of Life Cancer Treatment Functional Assessment Scale-Bone Marrow Transplantation	100	Descriptive Research
Urfalı, A., 2017	Master's Degree	To determine the quality of life and educational needs of patients undergoing liver transplantation	Patients who did not know how to protect themselves from postoperative infection had significantly higher energy levels, pain, emotional reaction, physical activity sub-dimensions, and total scores than patients who did.	* Patient Information Form * Nottingham Health Profile Scale	93	Descriptive Research
Güzel, H., 2017	Master's Degree	Determination of the level of compliance, quality of life, and factors affecting renal transplantation patients	It is thought that there is a significant relationship between patients' compliance and quality of life, and increasing compliance will decrease the frequency of side effects and improve quality of life.	* Patient Information Form * Adherence to Immunosuppressive Drug Use Scale *SF-36 Quality of Life Scale	244	Qualitative research
Güneş, H., 2017	Master's Degree	Determination of quality of life and anxiety levels of patients before liver transplantation	It was found that patients experienced low quality of life and high levels of both trait and state anxiety, with a significant negative correlation between anxiety levels and quality of life.	* Patient Information Form * Rolls Royce Quality of Life Scale * State and Trait Anxiety Scale	80	Descriptive Research
Doyğacı, A.G.A., 2017	Master's Degree	Evaluation of adherence to immunosuppressive therapy in patients undergoing kidney, liver, and heart transplantation	It was found that patients should be evaluated regularly in the post-transplantation period in terms of compliance with immunosuppressive drugs and factors that increase non-compliance, programs should be developed to increase compliance, education and counseling should be provided to patients and their relatives, and regular follow-ups should be performed.	*Data Collection Form	60	Descriptive Research

Bayrak, A.A., 2018	Master's Degree	Determining the rational drug use behaviors of renal transplant patients	Patients' rational drug use behaviors were found to be close to the desired level	*Data Collection Form	168	Descriptive Research
Gülen, H., 2018	Master's Degree	Assessment of the information needs of individuals who have undergone surgical intervention for organ donation (donor) to maintain their self-care needs	The information needs of donors were found to be moderate.	* Donor Information Form * Form for Determining the Information Requirements of Organ Donors after Organ Donation	73	Descriptive Research
Şahin, G., 2018	Master's Degree	To assess the psychosocial and economic challenges, as well as the quality of life, of patients undergoing left ventricular assist device implantation and heart transplantation.	It was found that the employment of the patients positively affected the sub-dimensions of the quality of life scale, while the complications experienced by the patients negatively affected their quality of life.	*Data Collection Form * Left Ventricular Assist Device and Heart Transplantation Problems Identification Form	66	Descriptive Research
Özadlı, Ç., 2019	Master's Degree	Evaluation of preoperative anxiety levels of donors and recipients in kidney transplantation	When the state-trait anxiety scale scores of the recipients and donors were compared according to the previous surgery status of the recipients and donors, the scores of the donors were found to be significant. According to the evaluation results, the trait anxiety dimension scores of the donors who had previous surgery were found to be significantly higher than those who had not.	*Data Collection Form * State and Trait Anxiety Scale	30-30	Descriptive Research
Eroğlu, G., 2019	Master's Degree	To determine the level of psychological resilience, coping with stress, and posttraumatic growth in patients after bone marrow transplantation and the relationship between these variables.	It has been determined that as psychological resilience increases, posttraumatic growth increases positively, and as the optimistic approach and self-confident approaches is used in coping with stress, posttraumatic growth and psychological resilience increase positively.	*Data Collection Form * Psychological Resilience Scale * Stress Coping Styles Scale * Post-Traumatic Development Scale	120	Descriptive Research

Bulut, S., 2019	Master's Degree	To evaluate the compliance with immunosuppressive treatment and quality of life of kidney transplant patients.	It was found that patient compliance was low. Additionally, a significant difference was observed between patients' age, income level, presence of diabetes, presence of hypertension, duration of transplantation, and their quality of life. However, no significant relationship was found between patients' adherence to immunosuppressive treatment and their quality of life.	*Data Collection Form * Adherence to Immunosuppressive Therapy Scale * Kidney Disease Quality of Life Scale	143	Descriptive Research
Çiftçi, İ., 2019	Master's Degree	Evaluation of the social support level of patients undergoing kidney transplantation	It has become necessary to evaluate family needs, investigate economic support sources, provide the necessary training regularly, and monitor the factors affecting life satisfaction.	*Data Collection Form * Revised Form of the Multidimensional Perceived Social Support Scale	61	Descriptive Research
Öztürk, B., 2019	Master's Degree	Determining the counseling needs of kidney transplant recipients	It was determined that the recipients had insufficient information and needed counseling before and after transplantation. During this period, it was determined that the recipients needed counseling regarding immunosuppressive drugs, complications, sexuality, and contraception, having children, starting a family, economic situations, and social support.	*Data Collection Form * Semi-structured Interview Form	10	Qualitative research
Cömert, G., 2019	Master's Degree	Determining the expectations of patients on the liver transplant waiting list and the difficulties they experience.	It was found that patients had low hopes for transplantation, but thoughts of transplantation had a positive effect.	*Data Collection Form	37	Descriptive Research
Yıldız, İ., 2020	Master's Degree	Comparison of care burdens of caregivers of patients receiving hemodialysis treatment and kidney transplantation.	It has been determined that the care burden of caregivers of patients receiving hemodialysis treatment is higher than that of those with transplantation.	*Data Collection Form * Zarit Caregiver Burden Scale	142	Descriptive Research

Kahya, G., 2020	Master's Degree	Determination of quality of life levels in patients undergoing kidney transplantation	It is thought that monitoring the quality of life and sexual functions of patients and making professional interventions when necessary will increase the quality of care and contribute positively to the quality of life.	*Data Collection Form *SF-36 Quality of Life Scale * Erectile Function International Assessment Form * Female Sexual Function Scale	73	Descriptive Research
Şahin, H., 2021	Master's Degree	Assessing the quality of life of patients undergoing heart transplantation	The patients' quality of life was found to be higher than the average except for the role of physical function sub-dimension and emotional role function sub-dimension.	*Data Collection Form *SF-36 Quality of Life Scale	75	
Ekinci, S., 2021	Master's Degree	Children followed up after bone marrow transplantation to determine parents' stress levels and perceptions of spousal support	Mothers' perceived spousal support is influenced by various factors, including education, employment status, number of children, family structure, socioeconomic status, and health conditions. While greater spousal support positively impacts coping with stress, it paradoxically coincides with increased perceived stress.	*Data Collection Form * Perceived Stress Scale * Spousal Support Scale	150	Descriptive Research
Zeren, C., 2021	Master's Degree	Exploring the impact of education provided through the therapeutic play method on psychosocial symptoms in children aged 6-12 undergoing bone marrow transplantation.	It was shown that the education given with the therapeutic play method was not effective in the regression behavior of the child, but there was a significant difference between the pre-test and post-test mean scores of the experimental group.	*Data Collection Form * Psychosocial Symptom Diagnostic Scale for Hospitalized Children	24	Randomized Controlled Trial
Sertbaş, G., 2021	Master's Degree	Determination of the effect of occupational therapy on anxiety, depression, and sleep quality in patients undergoing bone marrow transplantation during hospitalization	At the end of the application, it was determined that there was no difference in anxiety, depression, and sleep process parameters between the experimental and control groups, but the anxiety and depression levels of the patients in the experimental group decreased.	*Data Collection Form * Hospital Anxiety and Depression Scale * Visual Analog Scale	20	Randomized Controlled Trial

Özbek, İ., 2021	Master's Degree	Investigation of the Turkish validity and reliability of the scale of intensive care nurses' attitudes toward brain death and organ transplantation	The scale was found to be valid and reliable when adapted to Turkish.	*Data Collection Form * Scale of Intensive Care Nurses' Attitudes Towards Brain Death and Organ Donation	256	Scale Adaptation Study
Karabina, N., 2021	Master's Degree	To reveal the experiences of the siblings of children who received bone marrow transplantation for the first time about transplantation	It was found that most of the siblings wanted to be donors and were upset about this situation, wanted to participate in the care of their siblings, and needed morale and motivation.	* Semi-structured Interview Form	11	Qualitative research
Bayar, N., 2021	Master's Degree	To clarify the life experiences and impacts of patients after transplantation	Individuals were found to be ineffective and dependent on their health care, many of the patients isolated themselves, and most of them had economic problems.	* Semi-structured Interview Form	20	Qualitative research
Selçuk, S., 2021	Master's Degree	To examine weight gain and factors affecting weight gain in the first two years after transplantation in kidney transplant recipients	It was found that self-efficacy did not affect weight gain in kidney transplant recipients.	* Data Collection Form * General Self-Efficacy Scale	139	Descriptive Research
Bağcı, N., 2021	Master's Degree	To determine the relationship between pain beliefs of liver transplant patients and postoperative pain severity	It was found that the organic and psychological belief scores of the patients increased as the pain severity increased.	*Data Collection Form * Pain Beliefs Scale * Numerical Rating Scale	118	Descriptive Research
Karaghool, A.R.M., 2022	Master's Degree	To evaluate the quality of life of patients with renal transplantation and the factors affecting it	It was found that kidney transplant patients in Iraq had a moderate quality of life and there was no significant relationship between quality of life and gender, kinship, and marital status.	*Data Collection Form * SF-36 Quality of Life Scale	194	Descriptive Research
Güzel, H., 2022	PhD Degree	To examine the effect of reflexology on fatigue in renal transplantation patients	Reflexology has been found to reduce the severity of fatigue.	*Data Collection Form * Piper Fatigue Scale	68	Randomized Controlled Trial

Kurt, Ö.S., 2022	Master's Degree	To investigate healthy lifestyle habits and quality of life in individuals who have undergone stem cell transplantation, six months post-procedure and beyond.	In the late period, healthy lifestyle behaviors and quality of life were found to be at a moderate level.	*Data Collection Form * Healthy Lifestyle Behaviors Scale * SF-36 Quality of Life Scale * Cancer Treatment Functional Assessment Scale * Bone Marrow Transplantation	76	Descriptive Research
Koç, G.P., 2022	Master's Degree	Investigation of the effect of health literacy on immunosuppressive drug compliance in patients undergoing liver transplantation	It was observed that the higher the health literacy of the patients, the higher the immunosuppressive drug compliance, and those who received training on immunosuppressive drugs had higher health literacy levels.	*Data Collection Form * Health Literacy Scale * Adherence to Immunosuppressive Drug Use Scale	150	Descriptive Research
Aktepe, M., 2022	Master's Degree	Evaluation of biopsychosocial problems and quality of life experienced by patients with liver transplantation	It has been suggested that it is very important to know the biopsychosocial problems experienced by the patients, to evaluate the quality of life of the patients regularly, and to make arrangements to improve and support the quality of life for negatively affected patients.	*Data Collection Form * Nottingham Health Profile Scale	40	Descriptive Research
Noyan, S., 2022	Master's Degree	To investigate the prevalence of fatigue, insomnia, depression, anxiety, and stress in patients after allogeneic hematopoietic stem cell transplantation and the relationship between these symptoms	Fatigue, anxiety, and depression were observed in patients, and insomnia had a positive indirect effect on fatigue, stress, depression, and anxiety.	*Data Collection Form Kısa * Fatigue Inventory * Insomnia Severity Index * Depression Anxiety Stress Scale	126	Descriptive Research
Mohamed, S.H.F., 2023	Master's Degree	Assessing body perception, pain, fatigue, and anxiety levels in individuals awaiting kidney transplantation, those on hemodialysis, and those who have undergone kidney transplantation.	It was determined that hemodialysis patients awaiting kidney transplantation experienced more pain, had higher levels of fatigue and fatigue, and had lower body perception scores than kidney transplant patients.	*Data Collection Form * Lanss Pain Scale * Visual Similarity Scale * Beck Anxiety Scale * Body Perception Scale	240	Descriptive Research

Arslan, M., 2023	Master's Degree	o determine the adherence to immunosuppressive therapy and the occurrence of symptoms in renal transplantation patients and to determine the relationship between them	A negative, weak, and statistically significant relationship was found between symptom occurrence and symptom distress with the immunosuppressive drug use compliance scale.	*Data Collection Form * Adherence to Immunosuppressive Drug Use Scale * Modified Post Transplantation Symptom Occurrence and Discomfort Form	125	Descriptive Research
Üzmez, E., 2023	Master's Degree	Böbrek transplantasyonu yapılan hastaların öz yönetim düzeyleri ve ilişkili faktörlerin incelenmesi	It was determined that there was a negative and weakly significant relationship between the factors of recognizing and coping with abnormal situations at an early stage, self-care behaviors in daily life, and coping with stress and age, age at kidney transplantation, and time since kidney transplantation.	*Data Collection Form * Self-Management Scale in Kidney Transplant Recipients	108	Descriptive Research
Ok, D., 2023	Master's Degree	To determine symptom occurrence and discomfort, quality of life, and related factors in patients after renal transplantation	The rise in patients' symptom occurrence and discomfort scores has a detrimental impact on their quality of life.	*Data Collection Form * Modified Post-transplantation Symptom Occurrence and Discomfort 58-item Scale * SF-36 Quality of Life Scale	170	Descriptive Research
Başcı, D., 2023	PhD Degree	Determination of the effect of education provided with a mobile application developed for hematopoietic stem cell transplant patients on supportive care needs, distress, and quality of life	It was found that the education provided with the mobile application did not have a significant effect on the supportive care needs, distress, and quality of life of the patients in the first three months after transplantation.	*Data Collection Form * James Scale for Identifying Supportive Care Needs in Cancer Patients * Distress Thermometer and Functional Assessment Scale for Cancer Treatment in Bone Marrow Transplant Patients	36	Descriptive Research

4.Discussion

In this scope determination study, it was observed that the majority of the reviewed theses were at the master's level. Similarly, studies examining nursing theses in the literature have also found that master's theses are predominant (Kocaağalar and Güngör, 2024; Özalp and Avşar, 2024; Özkan, Adana and Yeşilfidan, 2024; Kars and Demir, 2024). This result may be attributed to the higher number of master's degree graduates. Many of the nursing theses related to transplantation were found to be associated with the postoperative period and focused on patient care based on individual needs. A review of the existing literature similarly highlights the importance of postoperative care and the nurse's role during this period (Hatipoğlu et al., 2017; İşeri, Karayurt and Yılmaz, 2018; Serper et al., 2023). It can be inferred that the concentration of studies in the postoperative period is due to the increased demand for nursing care and the intensive use of independent nursing roles during this time. Additionally, psychological needs following organ transplantation were frequently addressed in the reviewed theses. The literature also emphasizes the importance of psychological support during the transplantation process (Khoddam and Wellisch, 2019; Ong, and Ho, 2021; Sambucini et al., 2022). Given the complex surgical procedures, prolonged preparation period, and high risk of surgical complications before and after transplantation, the need for psychological support in these patients is considered an expected outcome. Since nurses are the professionals most likely to detect and identify psychological changes in patients early during the transplantation process, studies in this area are anticipated to provide significant benefits in both education and clinical practice. A common theme that emerged from the reviewed theses was the necessity of organizing training, courses, and certification programs specifically for transplantation nursing. The crucial role of evidence-based nursing practices is widely recognized in the literature (Sevinç and Kuru, 2024; Kerr and Rainey, 2021; Balakas and Smith, 2016; Chien, 2019). Evidence-based practices are considered key to improving healthcare quality and patient outcomes. Correspondingly, the reviewed theses frequently included recommendations highlighting the importance of evidence-based practices.

5.Conclusions

In this scope determination study, it was found that the majority of the theses were master's theses, primarily descriptive, and mainly focused on improving the recipient's quality of life in the postoperative period. As a result, it is recommended to increase studies involving donors, conduct theses that examine families from a holistic care perspective, focus on intervention studies in doctoral theses, and explore variables that address care outcomes beyond quality of life.

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Declaration Of Competing İnterest

None

References

Aksoy, N. (2014). Examination of the Risk Factors Leading to End-Stage Renal Failure in Patients Undergoing Transplantation. Doctoral Thesis, Marmara University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Istanbul.

Aktepe, M. (2022). Evaluation of the Biopsychosocial Problems and Quality of Life Experienced by Patients Undergoing Liver Transplantation. Master's Thesis, Hacettepe University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Ankara.

Altuntaş, T. (2013). Expectations of Patients Awaiting Liver Transplantation and Their Relatives, and the Difficulties They Experience. Master's Thesis, Gazi University, Institute of Health Sciences, Department of Nursing, Ankara.

Aras, G. (2006). Examination of the Problems, Needs, and Level of Care Participation of Patients and Their Families in Liver Transplantation. Master's Thesis, Marmara University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Istanbul.

Arslan, M. (2023). Evaluation of the Immunosuppressive Treatment Adherence Process and Symptom Development in Patients Who Have Undergone Kidney Transplantation. Master's Thesis, Ankara Yıldırım Beyazıt University, Institute of Health Sciences, Department of Nursing, Division of Internal Diseases Nursing, Ankara.

Aydın, A. (2012). Investigation of the Emotional States and Future Plans of Patients Waiting for Kidney Transplantation. Master's Thesis, Atatürk University, Institute of Health Sciences, Department of Internal Diseases Nursing, Erzurum.

Bağcı, H., Yücel, Ç. S., Eroğlu, S. (2021). The History of Organ Transplantation in the World and in Our Country and the Historical Development of Organ Transplant Nursing. II. International and IV. National Nursing History Congress. İzmir.

Bağcı, N. (2021). The Relationship Between Pain Beliefs and Pain Intensity in Liver Transplant Patients. Master's Thesis, İnönü University, Liver Transplant Institute, Department of Nursing, Malatya.

Balakas, K., Smith, J. R. (2016). Evidence-based practice and quality improvement in nursing education. Journal of Perinatal & Neonatal Nursing, 30(3), 191–194.

Bas-Sarmiento, P., Coronil-Espinosa, S., Poza-Méndez, M., Fernández-Gutiérrez, M. (2023). Intervention program to improve knowledge, attitudes, and behavior of nursing students towards organ donation and transplantation: A randomized controlled trial. Nurse Education in Practice, 68, 103596. https://doi.org/10.1016/j.nepr.2023.103596

Başcı, D. (2023). The Effect of Mobile Application-Based Education on Supportive Care, Distress, and Quality of Life in Hematopoietic Stem Cell Transplant Patients. Doctoral Thesis, Başkent University, Institute of Health Sciences, Department of Nursing, Ankara..

Bayar, N. (2021). Investigation of the Experiences of Transplantation Patients: A Qualitative Study. Master's Thesis, Bahçeşehir University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Istanbul.

Bounader, K., Flécher, E. (2024). End-stage heart failure: The future of heart transplant and artificial heart. La Presse Médicale, 53(1), 104191. https://doi.org/10.1016/j.lpm.2023.104191

Bozdemir, H. (2006). Investigation of Quality of Life in Patients Undergoing Liver Transplantation. Master's Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Surgical Diseases Nursing, İzmir.

Can, G., Akyüz Özdemir, F. (2023). Evidence-Based Care and Research Process in Nursing. Health Sciences University Nursing Journal; 5(3), 245-252.

Chien, L. Y. (2019). Evidence-based practice and nursing research. Journal of Nursing Research; 27(4), e29.

Cömert, G. (2019). Determining the Expectations and Difficulties Experienced by Patients on the Liver Transplant Waiting List. Master's Thesis, Istinye University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Istanbul.

Cürcani, M. (2008). The Effect of Education Given to Kidney Transplant Patients on Their Quality of Life, Treatment Adherence, and Psychological Issues. Master's Thesis, Atatürk University, Institute of Health Sciences, Department of Internal Diseases Nursing, Erzurum.

Çiftçi, E. S. (2014). Pre- and Post-Transplantation Psychosocial Experiences of Kidney Transplant Patients. Doctoral Thesis, İstanbul University, Institute of Health Sciences, Department of Surgical Diseases Nursing, İstanbul.

Ekinci, S. (2021). Determination of the Relationship Between Perceived Spousal Support and Stress Levels of Mothers of Children Who Have Undergone Bone Marrow Transplantation. Master's Thesis, İstanbul Okan University, Institute of Health Sciences, Department of Nursing, İstanbul.

Erdoğan, S., Nahcivan, N., Esin, M. N. (2021). Qualitative Research (4th ed.). In Nursing Research: Process, Application, and Critical Review (pp. 134-135). Nobel Medical Publishing.

Erdoğan, S., Nahcivan, N., Esin, M. N. (2021). Data Collection Methods and Tools (4th ed.). In Nursing Research: Process, Application, and Critical Review (pp. 193-195). Nobel Medical Publishing.

Ergül, G. (2011). Evaluation of the Effectiveness of Counseling in the Adaptation Processes of Kidney Patients After Transplantation. Doctoral Thesis, Marmara University, Institute of Health Sciences, Department of Psychiatric Nursing, İstanbul.

Güler, S. (2003). Knowledge of Nurses Working in the Kidney Transplantation Unit Regarding Patients' Care Needs. Master's Thesis, Hacettepe University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Ankara.

Güler, S. (2016). Determination of Quality of Life, Self-Care Ability, and Difficulties Experienced by Patients Undergoing Liver Transplantation. Master's Thesis, Harran University, Institute of Health Sciences, Department of Nursing, Şanlıurfa.

Güzel, H. (2022). The Effect of Reflexology on Fatigue in Renal Transplant Patients. Doctoral Thesis, Gaziantep University, Institute of Health Sciences, Department of Nursing, Gaziantep.

Hamid, M., Rogers, E., Chawla, G., Gill, J., Macanovic, S., Mucsi, I. (2021). Pretransplant patient education in solid-organ transplant: A narrative review. Transplantation, 106(4), 722-733. https://doi.org/10.1097/tp.0000000000003893.

Hatipoğlu, F. S., Karayurt, Ö., Sarıgöl Ordin, Y., İşeri, Ö. (2017). The Past, Present, and Future of Organ Transplant Nursing in Turkey... Florence Nightingale Journal of Nursing, 25(1), 49.

https://organkds.saglik.gov.tr/DSS/PUBLIC/Transplant_Solid_Organ.aspx. (Accessed: 28.04.2024).

International Transplant Nurses Society-American Nurses Association (ITNS-ANA) (2009). Transplant Nursing Scope and Standart of Practice. Congress Cataloging in Publication Data, USA.

İrfan, Ö. (2021). Validity and Reliability Study of the Attitude Scale of Intensive Care Nurses Toward Brain Death and Organ Transplantation. Master's Thesis, Sivas Cumhuriyet University, Institute of Health Sciences, Department of Surgical Diseases Nursing, Sivas.

İşeri, Ö. (2016). The Effect of Nursing Interventions Based on the Roy Adaptation Model on Care Outcomes in Patients Undergoing Liver Transplantation. Doctoral Theses, Dokuz Eylül University, Institute of Health Sciences, Department of Nursing, Department of Surgical Diseases Nursing, İzmir.

İşeri, P., Özge, Karayurt, Ö., Yılmaz, S. (2018). Living with a foreign organ: Counselling needs of living liver transplant recipients. Çukurova Medical Journal, 43(1), 81–90.

Kaçmaz, N. (1997). Psychological Needs of Kidney Transplant Patients. Master's Thesis, Hacettepe University, Institute of Health Sciences, Department of Nursing, Ankara.

Karabina, N. (2021). Bone Marrow Transplantation from the Perspective of Siblings. Master's Thesis, İstanbul Medipol University, Institute of Health Sciences, Department of Nursing Science, İstanbul.

Karagöl, A. R. M. (2022). Investigation of Quality of Life and Influencing Factors in Kidney Transplant Patients in Iraq. Master's Thesis, Çankırı Karatekin University, Institute of Health Sciences, Department of Nursing, Public Health Nursing, Ankara.Kars Fertelli T, Demir F (2024) Examination of Postgraduate Theses on Parkinson's in the Field of Nursing, Cumhuriyet Nursing Journal, 8(1): 92-98.

Kars Fertelli T, Demir F (2024) Examination of Postgraduate Theses on Parkinson's in the Field of Nursing, Cumhuriyet Nursing Journal, 8(1): 92-98.

Kerr, H., & Rainey, D. (2021). Addressing the current challenges of adopting evidence-based practice in nursing. British Journal of Nursing, 30(16), 970–974.

Khoddam, H., Wellisch, D. K. (2019). Psychological distress in hospitalized patients awaiting organ transplantation: Case examples, thematic exploration, and suggestions for intervention. Journal of Clinical Psychology in Medical Settings, 27(3), 622-631.

Kisecik, C. (2014). The Effect of Parental Depression Levels on the Quality of Life of Children After Hematopoietic Stem Cell Transplantation. Master's Thesis, Gazi University, Institute of Health Sciences, Department of Nursing, Ankara.

Knihs NS, Santos ACB, Magalhães AP, Barbosa SFF, Schuantes-Paim SM, Santos J. (2020). Management of Nurse Care in the Organ and Tissue Donation Process, 29:e20180445.

Kocaağalar Akince, E., Güngör, D. C. (2024). Trends in Graduate Theses on Nursing Education Between 2000-2023: A Content Analysis. International Journal of Social Sciences Academy, 14, 23-37.

Kolaski, K., Logan, L. R., Ioannidis, J. P. (2023). Guidance to best tools and practices for systematic reviews. JBJS Reviews, 11(6).

Koraş Sözen, K. (2021). Patient Safety in Surgery and the Role of Nurses. Haliç University Journal of Health Sciences. https://doi.org/10.48124/husagbilder.83713 .

Kurt, S. Ö. (2022). Investigation of Healthy Lifestyle Behaviors and Quality of Life in Individuals Undergoing Hematopoietic Stem Cell Transplantation. Master's Thesis, Haliç University, Graduate School, Department of Nursing, İstanbul.

Kuvancı Demir, A. (2013). Evaluation of Fatigue and Quality of Life in Heart Transplant Candidates. Master's Thesis, Acıbadem University, Institute of Health Sciences, Department of Internal Medicine, İstanbul.

Liu S, Zhou X, Dai H, Fang C, Wang H, Yao M, Hou Y. (2021). Assessing health-related quality of life of living kidney donors using the 36-item medical outcomes Short-Form-36 questionnaire: a meta-analysis. Psychol Health Med., 26(8):917-930.

Matrak, M. (2005). Identification of Physiological Problems Experienced by Patients Undergoing Allogeneic Stem Cell Transplantation. Master's Thesis, Hacettepe University, Institute of Health Sciences, Department of Internal Medicine Nursing, Ankara.

Noyan, S. (2022). Fatigue, Insomnia, Depression, Anxiety, and Stress Levels After Allogeneic Hematopoietic Stem Cell Transplantation and the Relationship Between These Symptoms: A Cross-Sectional Study. Master's Thesis, KTO Karatay University Graduate School Department of Nursing Psychiatric and Mental Health Nursing, Konya.

Oğuz, G. (2018). Evaluation of Symptoms and Care Needs in Patients Undergoing Hematopoietic Stem Cell Transplantation. Master's Thesis, İstanbul Bilim University, Institute of Health Sciences, Department of Nursing, İstanbul.

Ok, D. (2023). Symptom Development, Discomfort, Quality of Life, and Associated Factors in Patients After Kidney Transplantation. Master's Thesis, Pamukkale University, Institute of Health Sciences, Department of Nursing, Department of Fundamental Nursing, Denizli.

Ong, J. Q., Lim, L. J., Ho, R. C., Ho, C. S. (2021). Depression, anxiety, and associated psychological outcomes in living organ transplant donors: A systematic review. General Hospital Psychiatry, 70, 51-75.

Öden, T. N., Demir Korkmaz, F. (2021). Nurses' Responsibilities in Increasing Organ Donation Rates from Cadaveric Donors: What Can We Do in the Field? Journal of Health Sciences Institute, Celal Bayar University, 8(3), 558-565.

Özalp, C., Avşar, G. (2024). Examination of Graduate Theses Using Theory or Models in Nursing: A Systematic Review. Journal of Nursing and Health Sciences, 7(3), 532-540.

Özdemir, S. (2010). Preoperative Anxiety Levels in Kidney Transplant Recipients and Donors. Master's Thesis, Hacettepe University, Institute of Health Sciences, Department of Surgical Nursing, Ankara.

Özdemir, Z. (2015). Development of an Adherence Scale for Immunosuppressive Drug Use in Patients Undergoing Solid Organ Transplantation. Doctoral Thesis, Hacettepe University, Institute of Health Sciences, Department of Surgical Nursing, Ankara.

Özel, T. (2008). Frequency of Restless Leg Syndrome and Its Relationship with Sleep Quality After Kidney Transplantation. Master's Thesis, Afyon Kocatepe University, Institute of Health Sciences, Department of Internal Medicine Nursing, Afyon.

Özkan, M., Adana, F., Yeşilfidan, D. (2024). Review of Theses on Rational Drug Use. BÜSAD, 5(1), 197–204.

Özşaker, E. (2002). Determination of Quality of Life in Kidney Transplant Patients and Their Relatives and Investigation of Factors Affecting Quality of Life. Master's Thesis, Ege University, Institute of Health Sciences, Department of Nursing, İzmir.

Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ, 372:n71.

Pedreira-Robles, G., Garcimartín, P., Sevilla-Guerra, S., Bach-Pascual, A., García-Martínez, M., Morín-Fraile, V. (2023). Nurse-led clinical activity in kidney transplantation care in Spain: A cross-sectional observational study. Journal of Renal Care, 50(2), 168-175.

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., Khalil, H. (2021). Updated methodological guidance for the conduct of scoping reviews. JBI Evidence Implementation, 19, 3–10.

Polga Koç, G. (2022). Investigation of the Effect of Health Literacy on Immunosuppressive Drug Adherence in Patients Undergoing Liver Transplantation. Master's Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Nursing, İzmir.

Sambucini, D., Ciacchella, C., Pellicano, G. R., Zingaretti, G., Pierro, L., Aceto, P., Lai, C. (2022). Psychosocial treatment on psychological symptoms, adherence, and physiological function on transplanted patients: A systematic review and metanalysis. Journal of Psychosomatic Research, 154, 110717.

Sarıgöl Ordin Y, Karayurt Ö, Ertan N, Durmaz Edeer A, Yıldız S. (2023). Affecting factors in medication adherence in kidney transplant recipients. Turk J Nephrol.;32(1):48-54.

Sarıgöl Ordin, Y. (2013). Investigation of the Effect of Support Group Intervention on Patients' Knowledge, Symptoms, and Quality of Life After Liver Transplantation. Doctoral Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Surgical Nursing, İzmir.

Sarıgöl, Y. (2008). Investigation of Quality of Life Before and After Liver Transplantation. Master's Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Surgical Nursing, İzmir.

Scales, A., Bentley, H. (2020). Organ donation: nursing roles and responsibilities. British Journal of Nursing, 29(1), 60–61.

Selçuk, S. (2021). Investigation of Weight Gain and Influencing Factors in Kidney Transplant Recipients During the First Two Years Post-Transplantation. Master's Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Nursing, Department of Surgical Diseases Nursing, İzmir.

Serper, M., Burdzy, A., Schaubel, D. E., Mason, R., Banerjee, A., Goldberg, D. S., Martin, E. F., Mehta, S. J., Russell, L. B., Cheung, A. C., Ladner, D. P., Yoshino Benavente, J., Wolf, M. S. (2023). Patient randomized controlled trial of technology-enabled strategies to promote treatment adherence in liver transplantation: Rationale and design of the TEST trial. BMJ Open, 13(9).

Sertbaş, G. (2021). Investigation of the Effects of Occupational Therapy Applied During the Admission Process on Anxiety, Depression Symptoms, and Sleep Quality in Patients Undergoing Bone Marrow Transplantation. Master's Thesis, Acıbadem Mehmet Ali Aydınlar University, Institute of Health Sciences, Department of Internal Medicine Nursing, İstanbul.

Sevinç, E., Kuru Aktürk, N. B. (2024). Evidence-Based Tele-Nursing Practices and Areas of Use. Arel University Journal of Health Sciences, 8(1), 42-51.

Sheikh Mohamed F. H. (2023). Evaluation of Body Image Perception, Pain, Fatigue, and Anxiety Levels in Individuals Awaiting Kidney Transplantation and Undergoing Hemodialysis, and in Individuals with Kidney Transplantation. Master's Thesis, Amasya University, Institute of Health Sciences, Department of Nursing, Amasya.

Smith, E. (2021). Post-Operative Nursing Care of the Renal Transplant Patient. The Eleanor Mann School of Nursing Undergraduate Honors Theses Retrieved. https://scholarworks.uark.edu/nursuht/138.

Soylu, D. (2015). Determination of Quality of Life After Kidney Transplantation. Master's Thesis, Hasan Kalyoncu University, Institute of Health Sciences, Department of Nursing, Gaziantep.

Şahin, H. (2021). Investigation of the Quality of Life in Patients Undergoing Heart Transplantation. Master's Thesis, İstanbul Okan University, Institute of Health Sciences, Department of Nursing, İstanbul..

Şahin, N. (2012). Investigation of Drug Nonadherence, Its Reasons, and Expectations from Nurses in Patients After Liver Transplantation. Master's Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Surgical Nursing, İzmir.

Şahin, N. (2016). Adherence to Immunosuppressive Therapy and Influencing Factors After Liver and Kidney Transplantation. Master's Thesis, Dokuz Eylül University, Institute of Health Sciences, Department of Surgical Nursing, İzmir.

Talas, M.S. (2002). Identification of Challenges Experienced by Patients Undergoing Kidney Transplantation. Doctoral Thesis, Hacettepe University, Institute of Health Sciences, Department of Surgical Nursing, Ankara.

Tamer, M. (2015). Determination of Quality of Life After Liver Transplantation. Master's Thesis, Hasan Kalyoncu University, Institute of Health Sciences, Department of Surgical Nursing, Gaziantep.

Tuna, A., Karaaslan, E. (2024). Surgical Patient Safety and Evidence-Based Nursing Practices. Journal of Health Sciences and Clinical Research, 3(1), 20-35.

Uslu, A., Hatipoğlu, S., Ordin, Y.S., Karataş, M. (2024). Nursing Care in Solid Organ Transplantation: History of Solid Organ Transplantation. Akademisyen Publishing, pp. 1-17.

Yamantaş, Ö. (2010). Examination of the Quality of Life of Right Lobe Donors in Liver Transplantation. Master's Thesis, Haliç University, Institute of Health Sciences, Department of Nursing, İstanbul.

Yanar, M. (2015). Evaluation of the Relationship Between Intolerance of Uncertainty, Hopelessness, and Depression Levels in Patients and Their Relatives During the Organ Transplant Waiting Process. Master's Thesis, İstanbul Medipol University, Institute of Health Sciences, Department of Nursing, İstanbul.

Yaşar, N. (2016). Evaluation of Quality of Life and Care Needs of Patients Undergoing Hematopoietic Stem Cell Transplantation. Master's Thesis, İstanbul Bilim University, Institute of Health Sciences, Department of Nursing, İstanbul.

Yersoy Ateş, A. (2012). Evaluation of Care Needs in Transplanted Patients. Master's Thesis, İstanbul Bilim University, Institute of Health Sciences, Department of Nursing, İstanbul.

Zeren, C. (2021). Investigation of the effect of education given with therapeutic play method on psychosocial symptoms in 6-12 year old pediatric patients with bone marrow transplantation. Master's Thesis, Yeditepe University, Institute of Health Sciences, Department of Nursing, Division of Child Health and Disease Nursing, Istanbul.

Zhang D, Yu L, Xia B, Zhang X, Liang P, Hu X. Systematic review and meta-analysis of the efficacy of exercise intervention in kidney transplant recipients. World J Urol., 41(12):3449-3469. doi: 10.1007/s00345-023-04673-9.

Zhang W, Feng X, Deng X, Jin M, Li J, Xu J, Fang J, Pan C, Guo Y. Application of a specialist nurse-led multidisciplinary team model in the perioperative care of patients undergoing simultaneous pancreas and kidney transplantation: randomized controlled trial. Gland Surg., 30;12(5):619-627.

Zhang, I. W., Lurje, I., Lurje, G., Knosalla, C., Schoenrath, F., Tacke, F., Engelmann, C. (2024). Combined organ transplantation in patients with advanced liver disease. Seminars in Liver Disease, 44(03), 369-382. https://doi.org/10.1055/s-0044-1788674.

CHAPTER 3

THE ROLES OF NURSES IN RATIONAL DRUG USE IN GERIATRIC PATIENTS

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Introduction

The proportion of the elderly population is increasing in parallel with factors such as the current situation of the world population, making more use of the opportunities of modern and advanced medicine, the development of economic and sociocultural activities and the further decrease in fertility. Based on the United Nations Population Fund (UNFPA) 2019 data, it is estimated that the population aged 60 and over is over 900 million in the world, 1.4 billion by 2030 and this number will reach 2.1 billion by 2050. In other words, it is reported that one out of every five people in the world will be 60 years of age or older in 2050 (Karakuş, 2018; Spulber, 2019). According to 2024 data, the ratio of the population aged 65 years and over to the total population in Turkey is 10.6%; this ratio is projected to be 13.5% in 2030 and 17.9% in 2040. Turkey ranks 75th among 194 countries with the highest proportion of elderly people (Altın, 2020; TÜİK, 2025).

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With the increase in the elderly population, it is observed that chronic diseases and related drug use are also increasing. This situation brings along risks such as polypharmacy (use of more than one drug), drug interactions, side effects and misuse of drugs. At this point, the concept of rational drug use (RUD) gains great importance. Rational use of medicines aims to provide the patient with the right medicine, at the right dose, for the right duration and at an affordable cost. With the ageing of the society, the burden of disease and the rate of drug use also increase. While the increase in disease burden leads to polypharmacy, it also increases the rate of polypharmacy drug use due to inappropriate, unconscious, without physician control or problems caused by more than one chronic condition. The increase in the rate of drug use, which has become an important problem especially for elderly individuals, also increases mortality and morbidity (Özer and Özdemir, 2009). Therefore, rational drug use in elderly individuals is one of the most important issues that should be addressed.

Polypharmacy and inappropriate drug use in the elderly has become an increasing problem worldwide. In addition to obtaining significant benefits from drugs in elderly patients, inappropriate or multiple use of drugs may result in morbidity, mortality, and great harm in terms of functionality. When determining the doses of drugs used in the treatment of elderly individuals, especially in patients with multimorbidity, the cost to themselves and society should be minimised by meeting the individual needs of the person. Rational drug use includes involving the patient or his/her relatives in the treatment decision-making process, informing them about the use of drugs and adverse reactions, and regular monitoring of the patient during the treatment process. While arranging the treatment and care of the elderly, an individualised approach should be adopted without forgetting the importance of patient-centred approaches as well as the disease by paying attention to the principles of rational drug use (Polat and Doğu, 2024).

According to the World Health Organisation (WHO), rational use of a medication (RUD) means the use of a medication in accordance with the patient's clinical condition, at the right dose, at the right time, taking into account the costs of treatment. However, WHO states that approximately 50% of medical products in the world are prescribed, administered or sold incorrectly (Doğan and Çalışkan, 2019; Little, and Morley, 2013). Rational drug use is a process that starts with the diagnosis of the disease, planning and implementing the treatment, writing prescriptions compatible with the treatment, providing the necessary information to the patient before the treatment is applied, and ends with follow-up after the treatment (Bahat et al., 2012, Doğan and Çalışkan, 2019, Kim and Parish, 2017; Johansson-

Pajala et al., 2016). In this section, the roles and responsibilities of nurses in AIC are discussed.

1. Drug Use and Affecting Factors in the Elderly

The presence of more than one chronic disease in the elderly leads to polypharmacy and predisposes to comorbidities. Polypharmacy increases the incidence of side effects of medications and leads to a decrease in quality of life, an increase in health care costs and impaired compliance with medication use (Advinha et al., 2016; Corsonello et al., 2010; Khamis et al., 2019; Kirchmayer et al., 2016; Milos et al., 2013; Rizzuto et al., 2017). Although there is no clear definition, polypharmacy is a concept related to the number of drugs used or abused; it is defined as 'multiple drug use'. Epidemiological data show that polypharmacy is common in the elderly population. The prevalence also differs between the elderly living in the community and the elderly living in a care home or nursing home. In the elderly living in the community, the prevalence is 41% in Iceland, 43.4% in the USA, 35.8% in Australia and 46.8% in Italy. In Turkey, the prevalence varies between 11-69% (Frandsen and Pennington, 2014; Wright et al., 2019).

Age-related physiological changes may increase the risk of drug-related problems by affecting drug pharmacokinetics and pharmacodynamics. The fact that the risk of drug-drug interactions is higher in the elderly than in the young shows that the situation is potentially important. Due to the increase in the incidence of diseases with aging, it is common for elderly individuals to be prescribed multiple medications (Chen et al., 2012; Romskaug et al., 2017). While decreases in organ and system functions are observed due to changes occurring in the body with advanced age, the prevalence of various diseases increases due to physiological changes due to aging. These bio-physiological changes, which can affect pharmacokinetic and pharmacodynamic processes, may be related to multiple factors such as lifestyle, nutrition, gender, heredity and disease (Akten, 2018; Rodrigues and Oliveira, 2016; Stader et al. 2019). Table 1 presents a summary of these changes specific to the elderly individual (Corsonello et al., 2010; Kuprash et al., 2020; Kim and Parish, 2017; Mangoni and Jackson, 2004; McLean and Le Couteur, 2004; Stader et al., 2019; Shi and Klotz, 2011; Shi and Klotz, 2011).

Pharmacodynamics is defined as the effect of drugs in the body. As a result of ageing, changes in tissue receptor sensitivity and/or homeostatic control mechanisms may alter the effects of drugs. Pharmacodynamic changes include a decrease in baroreceptor reflexes that regulate blood pressure. Aging is accompanied by a decrease in beta-adrenoceptor activity, with the

beta1 receptor being mainly affected. This leads to a decrease in cardiac contractility, which can lead to increased circulation of catecholamines and heart failure. Other changes include a decrease in the renin-angiotensin-aldosterone system, an increased risk of bleeding with decreased synthesis of clotting factors, and a decrease in cholinergic neurons and receptors in the central nervous system (Kim and Parish, 2017; Peeters et al., 2019).

Table 1. ***Changes in the pharmacokinetic process specific to the elderly***

Pharmacokinetic Process	Changes Specific to the Elderly Individual
Absorption	With advancing age, changes in the gastrointestinal system are observed and gastrointestinal problems increase. Physiological parameters affecting drug absorption are gastric pH, gastric emptying, small intestinal absorption time and intestinal enzymes. Absorption of vitamin B12, iron, calcium (Ca), magnesium and leucine, which is carried out by active transporter mechanisms, is significantly impaired in the elderly.
Metabolism	The liver is the main organ of metabolism. Some studies have shown that hepatic blood flow is reduced by 40-60% in the elderly. Beta-blocker drugs such as propranolol and labetalol have extensive first-pass metabolism and their bioavailability is normally high. However, their bioavailability decreases with aging due to slowing or decreasing first-pass activation.
Distribution	In the aging process, the distribution of drugs decreases due to the decrease in the pumping function of the heart, deterioration of tissue microcirculation, decrease in the water areas of the body and storage of fat. Accordingly, the distribution time and half-life of lipophilic drugs are prolonged, the plasma concentrations of hydrophilic drugs increase due to the decrease in the water content in the body, the free fraction of acidic drugs in plasma increases due to the decrease in serum albumin, and the free fraction of some essential drugs decreases due to the increase in alpha 1-acid glycoprotein.
Breakthrough	Most medicines are eliminated through the kidneys. Kidney function begins to decline with ageing. Therefore, drugs may take longer to clear from the body and there is a higher risk of toxicity. A patient's estimated glomerular filtration rate should be taken into account when prescribing renally eliminated drugs. In the presence of renal disease, renally eliminated drug dosages and frequencies should be adjusted.

Polypharmacy is another important factor in terms of rational drug use in elderly individuals. Advanced age and residence in a nursing home or care home are the most important known risk factors for polypharmacy. Physiological and pathological changes that occur due to cognitive and functional decline in the elderly often cause individuals to face multiple diseases and treatment complications, which increases the tendency to consult

many doctors in the same or different branches (Abolhassani and Marques-Vidal, 2018; Bahat et al, 2012; Cherubini et al., 2016; Charlesworth et al., 2015; Mortazavi et al., 2016; Navaratnarajah and Jackson, 2017; Rochon and Schmader, 2013; Sigurdardottir et al., 2011). Physicians' lack of sufficient knowledge about the effects and interactions of a new drug and the possible effect of a newly prescribed drug to compensate for the side effect of the existing drug regimen in the elderly (prescription cascade) are among the causes of polypharmacy. Apart from these, factors such as incomplete health history of the elderly individual, use of drugs prescribed by different doctors together, inability to fully differentiate geriatric syndromes and iatrogenic conditions are among the causes of polypharmacy associated with health professionals (Elkin, 2020; İlhan and Öztürk, 2015; Rochon and Schmader, 2013, Rochon and Gurwitz, 2017; Tangiisuran et al., 2012).

In addition to polypharmacy, many factors such as frailty in the elderly, pharmacokinetic and pharmacodynamic changes, patient compliance with treatment, drug reactions, cognitive problems related to the individual or caregiver, visual impairments, comorbidities, liver, heart and kidney failure, other functional disorders, the elderly living alone and lack of knowledge about drug use reveal the importance of rational drug use (Kerry, 2015).

One of the most common problems experienced by elderly individuals, which should be addressed in rational drug use, is the side effects of medication. These effects can be experienced in a wide range from mild confusion to serious drug intoxications. Drug side effects due to multiple drug use, food-drug and drug-drug interactions, and cognitive problems are common in the elderly. Analgesics, anticoagulants, antibiotics, antihypertensives and oral hypoglycaemic agents are among the drugs that cause the most side effects in the elderly. Central nervous system depressants are the drugs with the highest risk of side effects in elderly individuals. The most common drug side effect symptoms are depression, falls, weight loss, functional and cognitive decline, fractures, urinary incontinence, extra primidal system findings, glaucoma and arrhythmia. Drug intoxications are seen as drug reactions due to the use of excessive number and dose of drugs without realising it. Warfarin, digoxin, antidiabetics, benzodiazepams, theophylline, nonsteroidal anti-inflammatory drugs, benzodiazepam, theophylline, nonsteroidal anti-inflammatory drugs are examples of drugs that mostly cause intoxication in elderly individuals. Nonsteroidal anti-inflammatory drugs are frequently prescribed to elderly patients, and gastrointestinal bleeding due to these drugs is the most common adverse drug reaction in the elderly leading to hospitalisation (Bahat et al., 2012; Doğan and Çalışkan, 2019; Peeters et al., 2019).

2. Rational Drug Use in the Elderly

Although the planning of a patient-specific individualised drug treatment considering the clinical course of diseases and treatment approaches in elderly individuals constitutes the first step in AIC (Ministry of Health. 2025), nurses, who are key members of the healthcare team, have important functions in taking a comprehensive history of the patient, including all medications and alternative product use, and evaluating whether the patient's complaints are drug-related before the planned treatment regimen is applied. The roles of nurses in providing care for the purpose of improving and protecting patient and community health, improving in case of illness and increasing the quality of life, reviewing the medical diagnosis and treatment plan prepared by the physician in the formation of the prescription cascade before implementation, creating a safe and healthy environment, education, counselling, research, management, quality improvement, collaboration and communication are noteworthy in teamwork (Kaboli et al., 2004; Nguyen and Spinelli, 2016; Rochon and Gurwitz, 2017). There are some principles that should be considered in rational drug use. Table 1 briefly summarises these principles (Bahat et al., 2012, Doğan and Çalışkan, 2019, Kim and Parish, 2017, Johansson-Pajala et al., 2016).

Table 2. ***Principles of Rational Drug Use in the Elderly***

1. A list of all medicines (prescription and non-prescription medicines, herbs, vitamins, dietary supplements) must be given to the patient or carer. The list should include the drug name (both generic and brand), dosage, frequency, route of administration and indications. The patient or carer should be informed according to this list.
2. The patient's medication must be checked with the prescription written by the physician.
3. Current drug therapy should be reviewed in terms of indication, possibility of switching to a safer and cheaper agent, minimum effective dosage, timing, side effects, toxicity, potential food-drug and drug-drug interactions. Non-pharmacological approaches should also be evaluated. Each drug should be matched to the relevant disease. Monitoring should be done periodically (at least once a year) and at each loss of function or worsening of symptoms.
4. The patient or carer should be informed about side effects, toxicity and the use of medicines when medical assistance is needed.
5. The drug dosing schedule should be simple, using minimum dosage, long-acting drugs if possible, and drugs that can treat two or three symptoms at the same time.
6. The patient or carer will be informed about medication adherence.
7. Pay attention to symptoms caused by possible side effects of the medication.
8. The efficacy level and toxicity of high-risk medicines should be monitored.
9. Drugs with potentially realised benefits should be preferred.
10. Care goals and priorities should be set for each patient.
11. The patient and carer should be involved in the treatment plan.
12. Quality of life must always be taken into account.
13. The medication should be gradually reduced before discontinuation.

3. The Place and Importance of the Nurse in Rational Drug Use in the Elderly

Nurses are needed to provide individualised, cost-effective care to patients with a holistic approach, to intervene in side effects and intoxications, and to reduce multiple drug use. The steps of rational drug use are progressing as physician, nurse, pharmacist, other healthcare professionals and patient. Nurses, who administer and follow up the medication, are in one-to-one communication with patients and are responsible for observation and training for drug administration, have important roles in rational drug use (Ekenler and Koçoğlu, 2016; İşli and Melik, 2018; Ministry of Health, 2022). Nurses have many basic responsibilities in terms of reducing polypharmacy and ensuring rational drug management in the elderly. Education and information, monitoring and evaluation, medication management, coordination and communication are the most basic responsibilities of the nurse.

With the increase in the number of drugs, the incidence of adverse drug reactions increased from 13% with two drugs to 82% with six or more drugs. Nurses have the opportunity to lead initiatives aimed at educating team members and patients on improved medication management practices. They can lead quality improvement projects to identify polypharmacy rates in care settings and implement measures to discontinue inappropriate medications. Nurses promote the use of non-pharmacological strategies to treat common symptoms in old age, such as insomnia, constipation and behavioural symptoms of dementia. The nurse who monitors the elderly for possible drug side effects should be aware that responses to medications may vary from patient to patient. For example, it should be taken into consideration that taking some drugs used for B12 deficiency, gout or rheumatism together with antibiotics may reduce drug absorption in elderly patients. The concomitant use of some drugs used for sedation and sleep with alcohol may lead to coma and death as a result of depression in the central nervous system. Therefore, the nurse should definitely inform the patient and his/her relatives about drug-drug interactions. In addition, nurses should also determine the situations that prevent the elderly from self-administering their medications and explain how to use prescribed medications, unexpected interactions and side effects of medications. The individual differences of the patient must be taken into consideration while providing information. Nurses who provide appropriate written, shaped, colourful materials for people with visual impairment should help them to take responsibility by providing appropriate training to caregivers or family members, to benefit from some tools and digital applications (alarm and vibration warning, clock showing the dose of

medication to be taken and compartmentalised medicine boxes) that remind patients of their medications (Çorum and Üney, 2017; Kim and Parish, 2017; Johansson-Pajala et al., 2019).

The elderly should be asked whether they use non-drug supplements and a regime list including these supplements should be given to the elderly and the caregiver. Not only the brands but also the generic names of the drugs should be written. The patient should be informed about the frequency, dose, indication for use and possible side effects (Agbabiaka et al., 2017; Leibovitch et al., 2004).

Considering the recommendations made by the World Health Organisation on this subject, taking a complete anamnesis, using the correct diagnostic methods, preferring low-cost and patient-specific treatment methods, administering the drugs in the correct dose and in the correct ways, and informing the patient in detail within the scope of these issues were included. Training and supervision of the entire healthcare team, especially nurses, on AIC has been emphasised (WHO, 2007).

Conclusion and Recommendations

Rational drug use in older adults is essential to reduce adverse outcomes, increase therapeutic efficacy and improve quality of life. Nurses, with their holistic approach to care and frequent patient contact, are indispensable in ensuring safe and effective medication administration. Investing in nursing education and empowering nurses in clinical decision-making processes are important steps towards safer pharmacotherapy for an ageing population. While the nurse improves the quality of life of elderly individuals and their caregivers with her/his role as educator, counsellor and many modern roles, she/he also contributes to the hospital and national economy. Guiding principles help nurses understand their roles and professional responsibilities to safely manage medicines in all practice settings. It is important to examine the behaviours of the elderly and to change the existing wrong knowledge and attitudes as the first step in this regard.

REFERENCES

Abolhassani, N., & Marques-Vidal, P. (2018). Polypharmacy, defined as taking five or more drugs, is inadequate in the cardiovascular setting. *Journal of Clinical Epidemiology*, 101, 1–4. https://doi.org/10.1016/j.jclinepi.2018.05.004.

Advinha, A. M., Henriques, A., Guerreiro, M. P., Nunes, C., Lopes, M. J., & Oliveira-Martins, S. (2016). Cross-cultural validation of the Drug Regimen Unassisted Grading Scale (DRUGS) to assess community-dwelling elderly's ability to manage medication. *European Geriatric Medicine*, 7(5), 424–429. https://doi.org/10.1016/j.eurger.2016.04.002

Agbabiaka, T. B., Wider, B., Watson, L. K., & Goodman, C. (2017). Concurrent use of prescription drugs and herbal medicinal products in older adults: A systematic review. *Drugs & Aging*, 34(12), 891–905. https://doi.org/10.1007/s40266-017-0502-2.

Akten, İ. M. (2018). The role of nurse in rational drug use in the elderly. *In Health science book* (Chapter 25, pp. 253–259). Retrieved April 17, 2025, from https://www.researchgate.net/publication/323934437_The_Role_of_Nurse_in_Rational_Drug_Use_in_the_Elderly

Altın, Z. (2020). Covid-19 pandemisinde yaşlılar. *Tepecik Eğitim ve Araştırma Hastanesi Dergisi*, 30(Ek sayı), 49–57. doi:10.5222/terh.2020.93723.

Bahat, G., Tufan, F., Akin, S., Tufan, A., Erten, N., & Karan, M. A. (2012). Rational drug use in the elderly. *Journal of Gerontology & Geriatric Research*, 1, 104.

Charlesworth, C. J., Smit, E., & Lee, D. S. (2015). Polypharmacy among adults aged 65 years and older in the United States: 1988–2010. *The Journals of Gerontology: Series A*, 70(8), 989–995. https://doi.org/10.1093/gerona/glv013.

Chen, L. L., Tangiisuran, B., Shafie, A. A., & Hassali, M. A. A. (2012). Evaluation of potentially inappropriate medications among older residents of Malaysian nursing homes. *International Journal of Clinical Pharmacy,* 34(4), 596–603. Doi: 10.1007/s11096-012-9651-1.

Cherubini, A., Corsonello, A., & Lattanzio, F. (2016). Polypharmacy in nursing home residents: What is the way forward? *Journal of the American Medical Directors Association*, 17(1), 4–6.

Corsonello, A., Pedone, C., & Incalzi, R. A. (2010). Age-related pharmacokinetic and pharmacodynamic changes and related risk of adverse drug reactions. *Current Medicinal Chemistry*, 17(6), 571–584. https://doi.org/10.2174/092986710790416326

Corsonello, A., Pedone, C., & Incalzi, R. A. (2010). Age-related pharmacokinetic and pharmacodynamic changes and related risk of adverse drug reactions. *Current Medicinal Chemistry*, 17(6), 571–584. https://doi.org/10.2174/092986710790226327.

Çorum, D., & Üney, K. (2017). Besin-İlaç Etkileşimleri. Dicle Üniversitesi Veteriner Fakültesi Dergisi, 10(1), 38–55.

Doğan, H. D., & Çalışkan, K. (2019). Why rational drug management in an elderly individual? *International Health Administration and Education (Sanitas Magisterium),* 5(2), 60–70.

Ekenler, Ş., & Koçoğlu, D. (2016). Bireylerin akılcı ilaç kullanımıyla ilgili bilgi ve uygulamaları. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi,* 3(3), 44–55.

Elkin, N. (2020). Yaşlılarda polifarmasi ve akılcı ilaç kullanımına aile hekimliği yaklaşımı. *İstanbul Gelişim Üniversitesi Sağlık Bilimleri Dergisi*, 11, 279–290. h https://doi.org/10.38079/igusabder.649423

Frandsen, G., & Pennington, S. S. (2014). Abrams'ın Klinik İlaç Tedavisi: Hemşireler İçin Akılcı İlaç Uygulamaları (E. İyigün & S. Taştan, Eds., 10. Baskı). Akademisyen Tıp Kitap Evi.

İlhan, B., & Öztürk, G. B. (2015). Yaşlı ve akılcı ilaç kullanımı. *Türkiye Klinikleri Journal of Geriatrics - Special Topics*, 1(1), 1–7.

İşli, F., & Melik, B. (2018). *Ulusal Antibakteriyel İlaç Tüketim Sürveyansı–2018*. Ankara: Sağlık Bakanlığı. Retrieved April 17, 2025, from https://titck.gov.tr/

Johansson-Pajala, R. M., Blomgren, K. J., Bastholm-Rahmner, P., et al. (2016). Nurses in municipal care of the elderly act as pharmacovigilant intermediaries: A qualitative study of medication management. *Scandinavian Journal of Primary Health Care*, 34(1), 37–45. https://doi.org/10.3109/02813432.2015.1132882.

Kaboli, P. J., McClimon, B. J., Hoth, A. B., & Barnett, M. J. (2004). Assessing the accuracy of computerized medication histories. *The American Journal of Managed Care,* 10(11), 872–877.

Karakuş, B. (2018). *Türkiye'de yaşlılara yönelik hizmetler, kurumsal yaşlı bakımı ve kurumsal yaşlı bakımında illerin durumu*. T.C. Aile ve Sosyal Politikalar Bakanlığı Yayınları, Engelli ve Yaşlı Hizmetleri Genel Müdürlüğü.

Kerry, Z. (2015). Yaşlılarda doğru ilaç kullanımı. *Ege tıp dergisi*, *54*. Retrieved April 17, 2025, from http://egetipdergisi.com.tr/tr/download/article-file/350736

Khamis, S., Abdi, A. M., Uzan, A., & Basgut, B. (2019). Applying Beers Criteria for elderly patients to assess rational drug use at a university hospital in Northern Cyprus. *Journal of Pharmacy & Bioallied Sciences,* 11(2), 133.

Kim, J., & Parish, A. L. (2017). Polypharmacy and medication management in older adults. *Nursing Clinics of North America*, 52(3), 457–468. https://doi.org/10.1016/j.cnur.2017.03.005.

Kirchmayer, U., Mayer, F., Basso, M., De Cristofaro, R., Mores, N., Cappai, G., et al. (2016). Polypharmacy in the elderly: A population based cross-sectional study in Lazio, Italy. *European Geriatric Medicine,* 7(5), 484–487.

Kuprash, L., Gudarenko, S., Kuprash, O., Gorchakova, N., & Khodakivska, O. (2020). Age peculiarities of pharmacokinetics and pharmacodynamics of medicines. *Advances in Legal Medicine*, 1(1), 33–39. https://doi.org/10.25083/al/1.1/6.

Leibovitch, E. R., Deamer, R. L., & Sanderson, L. A. (2004). Food-drug interactions: Careful drug selection and patient counseling can reduce the risk in older patients. *Geriatrics,* 59(3), 19–22.

Little, M. O., & Morley, A. (2013). Reducing polypharmacy: Evidence from a simple quality improvement initiative. *Journal of the American Medical Directors Association*, 14(3), 152–156. https://doi.org/10.1016/j.jamda.2012.11.007.

Mangoni, A. A., & Jackson, S. H. D. (2004). Age-related changes in pharmacokinetics and pharmacodynamics: Basic principles and practical applications. *British Journal of Clinical Pharmacology,* 57(1), 6–14. https://doi.org/10.1046/j.1365-2125.2003.02007.x.

McLean, A. J., & Le Couteur, D. G. (2004). Aging biology and geriatric clinical pharmacology. *Pharmacological Reviews*, 56(2), 163–184. https://doi.org/10.1124/pr.56.2.4.

Milos, V., Rekman, E., Bondesson, Å., Eriksson, T., Jakobsson, U., & Westerlund, T. (2013). Improving the quality of pharmacotherapy in elderly primary care patients through medication reviews: A randomized controlled study. *Drugs & Aging,* 30, 235–246.

Mortazavi, S. S., Shati, M., Keshtkar, A., Malakouti, S. K., Bazargan, M., & Assari, S. (2016). Defining polypharmacy in the elderly: A systematic review protocol. *BMJ Open,* 6, e010989. https://doi.org/10.1136/bmjopen-2015-010989.

Navaratnarajah, A., & Jackson, S. H. D. (2017). The physiology of ageing. *Medicine,* 45(1), 6–10. https://doi.org/10.1016/j.mpmed.2016.10.009.

Nguyen, P. V. Q., & Spinelli, C. (2016). Prescribing cascade in an elderly woman. *Canadian Pharmacists Journal,* 149(3), 122–124. https://doi.org/10.1177/1715163516644580.

Özer, E., & Özdemir, L. (2009). Yaşlı bireyde akılcı ilaç kullanımı ve hemşirenin sorumlulukları. *Hacettepe Üniversitesi Sağlık Bilimleri Fakültesi Hemşirelik Dergisi*, 42–51.

Peeters, L. E. J., Kester, M. P., Feyz, L., Van Den Bemt, P. M. L. A., Koch, B. C. P., Van Gelder, T., et al. (2019). Pharmacokinetic and pharmacodynamic considerations in the treatment of the elderly patient with hypertension. *Expert Opinion on Drug Metabolism & Toxicology*, 15(4), 287–297. https://doi.org/10.1080/17425255.2019.1591351

Polat Özer, Y., & Doğu, B. B. (2024). Yaşlılarda akılcı ilaç kullanımı. In M. Tecder (Ed.), *Akılcı İlaç Kullanımı ve Geriatri* (s. 1–5). Türkiye Klinikleri.

Rizzuto, D., Melis, R. J. F., Angleman, S., Qiu, C., & Marengoni, A. (2017). Effect of chronic diseases and multimorbidity on survival and functioning in elderly adults. *Journal of the American Geriatrics Society*, 65(5), 1056–1060. https://doi.org/10.1111/jgs.14868.

Rochon, P. A., & Gurwitz, J. H. (2017). The prescribing cascade revisited. *The Lancet,* 389(10081), 1778–1780. https://doi.org/10.1016/S0140-6736(17)31281-0.

Rochon, P. A., & Schmader, K. E. (2013). Drug prescribing for older adults [Internet]. UpToDate. Retrieved April 17, 2025, from https://www.uptodate.com/contents/drug-prescribing-for-older-adults

Rodrigues, M. C. S., & Oliveira, C. de. (2016). Drug-drug interactions and adverse drug reactions in polypharmacy among older adults: An integrative review. *Revista Latino-Americana de Enfermagem,* 24, e2800. https://doi.org/10.1590/1518-8345.1316.2800.

Romskaug, R., Molden, E., Straand, J., Kersten, H., Skovlund, E., & Pitkala, K. H. (2017). Cooperation between geriatricians and general practitioners for improved pharmacotherapy in home-dwelling elderly people receiving polypharmacy—the COOP

Study: Study protocol for a cluster randomised controlled trial. *Trials,* 18(1), 158. Doi: 10.1186/s13063-017-1900-0.

Sağlık Bakanlığı. (2022). *Stratejik Plan 2019–2023.* Retrieved April 17, 2025, from https://sgb.saglik.gov.tr/TR,61665/tc-saglik-bakanligi-2019-2023--stratejik-plani.html.

Shi, S., & Klotz, U. (2011). Age-related changes in pharmacokinetics. *Current Drug Metabolism*, 12(7), 601–610. https://doi.org/10.2174/138920011796504527.

Shi, S., & Klotz, U. (2011). Age-related changes in pharmacokinetics. *Current Drug Metabolism*, 12(7), 601–610. https://doi.org/10.2174/138920011796504527.

Sigurdardottir, A. K., Arnadottir, S. A., & Gunnarsdottir, E. D. (2011). Medication use among community-dwelling older Icelanders: Population-based study in urban and rural areas. *Laeknabladid,* 97(12), 675–680. https://doi.org/10.17992/lbl.2011.12.401.

Spulber, D. (2019). Coping and resilience in life-long learning and ageing: New challenges. *Geopolitical, Social Security and Freedom Journal,* 2(1), 93–103. Doi: 10.2478/gssfj-2019-0009.

Stader, F., Siccardi, M., Battegay, M., Kinvig, H., Penny, M. A., & Marzolini, C. (2019). Repository describing an aging population to inform physiologically based pharmacokinetic models considering anatomical, physiological, and biological age-dependent changes. *Clinical Pharmacokinetics*, 58(4), 483–501. https://doi.org/10.1007/s40262-018-0713-6.

T.C. Sağlık Bakanlığı. (2025). Akılcı İlaç Kullanımı. Retrieved April 17, 2025, from https://akilciilac.titck.gov.tr/.

Tangiisuran, B., Graham Davies, J., Wright, J. E., & Rajkumar, C. (2012). Adverse drug reactions in a population of hospitalized very elderly patients. *Drugs & Aging*, 29(8), 669–679. Retrieved April 17, 2025, from https://link.springer.com/article/10.1007/BF03262282.

Türkiye İstatistik Kurumu (TÜİK). (2025, Mart 13). *İstatistiklerle Yaşlılar 2024* Sayı: 54079. Retrieved April 17, 2025, from https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Yaslilar-2024-54079

World Health Organization. (2007). *Progress in the Rational Use of Medicines (A60/24).* Retrieved April 17, 2025, from https://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_24-en.pdf

Wright, D., Scott, S., Buck, J., & Bhattacharya, D. (2019). Role of nurses in supporting proactive deprescribing. *Nursing Standard*, 34(3), 44–50. https://doi.org/10.7748/ns.2019.e11280.

CHAPTER 4

THE PLACE AND IMPORTANCE OF SOLUTION-FOCUSED INTERVENTION IN UNDERGRADUATE STUDENTS EXPERIENCING EXAM ANXIETY

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Introduction

Solution-focused brief therapy is a psychotherapy approach based on creating solutions rather than solving problems. It explores current causes and hopes for future, not current problems and past causes. It can be used safely in addition to the treatment methods used (Wand, Acret, & D'Abrew, 2017). Solution-focused intervention (SFI), a competency-based model that minimizes the emphasis on past failures and problems and instead focuses on the people's strengths and previous successes, was originally developed by "Steve De Shazer" and colleagues at "the Brief Family Therapy Center in Milwaukee, Wisconsin" (Ali, 2018). The emphasis in SFI is on finding a solution to problems that the people identifies as important and then reinforcing

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the people's success in solving these problems. This method helps the people recognize their ability to solve problems (Smock et al., 2008).

Exams are a normal part of school life. People are evaluated for their achievements, skills, and abilities, tests and exams are considered important tools for measuring academic success (Aihie & Igbineweka, 2018). Understanding and addressing test-related anxiety among students has emerged as an important area of focus (Wahyudin et al., 2024). Test anxiety can have negative effects on students' emotional development and behavior, as well as their feelings and thoughts about school (Salend, 2012). SFI is important to help students overcome anxiety so that they can reach their maximum academic potential (Wahyudin et al., 2024). This study aimed to examine the effect of solution-focused intervention on test anxiety in university students.

Solution-Focused Intervention

SFI is a model that trivializes past failures and problems; focuses on the person's past and future successes, and addresses their strengths and capabilities (Gan, 2020). SFI is a widely used psychotherapeutic approach. Its basic foundations consist of the view that the person has the capacity to know what is best for him/herself and can effectively plan how to achieve desired goals (Ferraz, 2008).

SFI includes methods and techniques such as scaling questions, cheerleading effect, miracle questions, and coping questions (Vermeulen-Oskam et al., 2024).

Scaling questions: The client is asked to determine a degree between 0-10. Thus, the client is asked to evaluate both the current situation and the situation he/she wants to solve. While "0" indicates the situation where everything is going worst, "10" indicates the miraculous situation where the client's goals are realized. In this way, the client notices the progress in the intervention process and clearly determines their goals. The client is encouraged to reach the things they care about (Iveson, 2002; Bilgin, 2016).

Cheerleading effect: In this method, where feedback that positively affects the therapeutic process in the client is included, the client's self-confidence and existing power are reminded with appropriate and timely compliments. In this way, the resistance that the client has

to feelings of incompetence and inappropriateness is broken down (Sarıçam, 2014).

Miracle questions: The client is made to realize the characteristics and positive aspects of his/her strengths, and is asked to explain in detail what kind of changes could occur in his/her life if his/her problems are solved in the future. In this way, the client is able to determine what kind of future he/she dreams of, and he/she moves on to the solution area and moves towards the solution without touching on his/her regrets (Bilgin, 2016).

Coping questions: The aim of coping questions that can be asked in the form of "What have you found useful so far?" is to contribute to the determination of the strategies of the client to cope with his/her problems (Sarıçam, 2014).

There are 3 basic rules in SFI: "If it's not broken, don't fix it, if it works, do more, if it doesn't work, do something different" (Sklare 2021).

"Don't fix it if it's not broken": If the client doesn't have a complaint, there is no point to intervene. The client should determine the issues that he/she defines as problems in his/her life (Meydan, 2013).

"If it works, do more": The SFI practitioner should focus attention on the issues where the client can solve the problem by identifying the points that are not problems; should contribute to the client's awareness of the points he/she has succeeded in and encourage him/her to repeat it (Sklare, 2010).

"If it doesn't work, do something different": It is useless to repeat a method that has been proven not to work. Instead, different solution strategies should be produced by the client (Meydan, 2013).

When compared to other approaches, the SFI may take less time to reach a solution. In this way, it is both less costly and saves time for the people (Şahin & Siyez, 2023). In a study conducted by Pakrosnis and Cepukiene (2015), it was concluded that solution-focused self-help reinforced positive changes in the well-being of university students.

Exam Anxiety and Solution-Focused Initiative

In today's education system, exams, tests and evaluations are of great importance in determining a student's future career path (Kaur Khaira et al., 2023). The main environmental causes of exam anxiety seen in students include factors such as the type of exam, the attitudes of the exam invigilators, physical conditions, the classroom in which the student takes the exam and the difficulty of the course (Demirci et al., 2013; Engin et al., 2016; Aslan et al., 2021). In addition to positive effects such as pleasure, hope, pride and relaxation in students' academic processes, high levels of exam anxiety and, in addition, negative effects such as anger, anxiety, hopelessness and boredom play a role (Turner et al., 2024). High levels of anxiety become a problem when they prevent preparation for and taking the exam (Badrian et al., 2022).

It can be said that exam anxiety causes negative feelings and thoughts in a person. In this context, using effective coping strategies is very important (Terzi & Koçak, 2023). Test or exam anxiety have negative effects on students' emotional development and behavior, and can also affect their feelings about themselves and school. Anxiety about exam situations is an emotional problem for many students and can lead to neurotic difficulties if not taken into account. SFI, which is one of the approaches used to find a solution to the problem of test anxiety, helps students develop a more positive perspective on exams; helps reduce test anxiety; improves their self-confidence in facing exams and helps them develop coping skills that can be useful in various aspects of their lives (Salend, 2012; Wahyudin et al., 2024). SFI increase individuals' perceptions of social support, thus allowing them to cope with problems more easily (Laurila et al., 2024).

In SFI, by using personalized language and analyzing the person's past successes, the individual's awareness is increased, and by discovering their own strengths and resources, the person is provided with the opportunity to recognize the future in which the current problem has no effect on their life (Żak & Pękala, 2024). The use of a solution-focused approach, which is low-cost and uses techniques such as miracle questions, scaling, the cheerleader effect, and exceptional cases, which are beneficial for solving problems experienced during university education, contributes to solving the problems of individual

students and reduces exam anxiety. The SFI also states that increasing positive expectations and positive emotions such as hope and optimism in individuals can be associated with positive outcomes (Franklin et al., 2017; Işık et al., 2021). In the review study conducted by Żak and Pękala (2024), it is stated that SFI have different effects on issues such as self-esteem, hope, parenting, and internalization in individuals of different age groups, and that interventions are applied on issues such as test anxiety and adaptation to school life in children and adolescents, but the trust in these initiatives is at a moderate level. By including the roles of family and friends in SFI, individuals' real and perceived need for social support can be met and they can be focused on solutions rather than problems (Laurila et al., 2024).

Conclusion and Recommendations

Exam anxiety can be identified as the most common and persistent fear seen in students. Situations such as anxiety, fear, and shame negatively affect a person's problem-solving ability. In this context, SFI that highlight the positive aspects of student individuals and help the student solve the problem themselves, together with counseling consisting of several meetings, serve to solve the problem. It has been observed that SFI have a reducing effect on exam anxiety and increasing problem-solving skills in undergraduate students.

It has been observed that the number of studies on the place and importance of SFI in undergraduate students experiencing exam anxiety is insufficient. It is recommended that randomized controlled studies be conducted on a larger scale on this subject. It is also recommended that students with exam anxiety be identified and SFI be planned for students in the required area. More effective coping and adaptation to the intervention can be achieved by cooperating with the family or friends of the student with exam anxiety.

References

Aihie, O. N., & Igbineweka, M. N. (2018). Efficacy of solution focused brief therapy, systematic desensitization and rational emotive behavioural therapy in reducing the test anxiety status of undergraduates in a Nigerian university. *Journal of Educational and Social Research*, 8(1). https://doi.org/10.2478/jesr-2018-0002

Ali, M. (2018). Solution focused brief therapy in alcohol dependence syndrome. Unpublished Master's Thesis, Central Institute of Psychiatry, Ranchı University, India.

Aslan, H., Akyüz, H. Ö., Güneş, Ş., Acat, S., Yeşilmen, M., & Caner, R. (2024). Exam stress levels of nursing department students in a university. *The Journal of Social Sciences*, 52(52), 184-189. http://dx.doi.org/10.29228/SOBIDER.51476

Badrian, M., Bazrafkan, L., & Shakour, M. (2022). Medical science students' experiences of test anxiety: A phenomenological study. *BMC Psychology*, 10(1), 187. https://doi.org/10.1186/s40359-022-00896-4

Bilgin, O. (2016). The effect of solution-focused short-term group counseling on the self-confidence level of adolescents. Unpublished Doctoral Thesis, Sakarya University, Institute of Educational Sciences, Sakarya.

Demirci, N., Engin, A. O., Bakay, İ., & Yakut, Ö. (2013). The effect of stress and stress-inducing situations on students. *Journal of Research in Education and Teaching*, 2(3), 276-284.

Davies, E. B., Morriss, R. & Glazebrook, C. (2014). Computer-delivered and web- based ınterventions to ımprove depression, anxiety, and psychological well-being of university students: A systematic review and meta- analysis. *J. Med. Internet Res*., 16(5), e130. https://doi.org/10.2196/jmir.3142

Engin, A. O., Aksakal, İ., Seven, M. A., & Sayan, A. (2016). Relationalship between stress and learning success. *Ekev Academy Journal*, 20(66), 107-128.

Ferraz, H., & Wellman, N. (2008). The integration of solution-focused brief therapy principles in nursing: A literature review. *Journal of Psychiatric and Mental Health Nursing*, 15(1), 37–44. https://doi.org/10.1111/j.1365-2850.2007.01204.x

Franklin, C., Zhang, A., Froerer, A., & Johnson, S. (2017). Solution focused brief therapy: A systematic review and meta-summary of process research. *Journal of Marital And Family Therapy*, 43(1), 16–30. https://doi.org/10.1111/jmft.12193

Gan C. (2020). Solution-Focused Brief Therapy (SFBT) with individuals with brain injury and their families. *NeuroRehabilitation*, 46(2), 143–155. https://doi.org/10.3233/NRE-192967

Işık, M., Demircan, Ü., & Gürhan, N. (2021). The effect of solution-focused short-term psychological counseling on problem solving skills and exam anxiety. *EJONS International Journal on Mathematic, Engineering and Natural Sciences,* 2602-4136. http://dx.doi.org/10.38063/ejons.471

Iveson, C. (2002). Solution-focused brief therapy. *Advances in Psychiatric Treatment,* 8(2), 149-157.

Kaur Khaira, M., Raja Gopal, R. L., Mohamed Saini, S., & Md Isa, Z. (2023). Interventional strategies to reduce test anxiety among nursing students: A systematic review. *International Journal of Environmental Research and Public Health*, 20(2), 1233. https://doi.org/10.3390/ijerph20021233

Laurila, M., Lindfors, O., Knekt, P., & Heinonen, E. (2024). The effect of individual short- and long-term psychotherapy on perceived social support: Analysis of secondary outcomes of a randomized clinical trial. *Nordic Journal of Psychiatry*, 78(3), 230–237. https://doi.org/10.1080/08039488.2024.2306229

Meydan, B. (2013). Solution-Focused Short-Term Counseling: A study on its effectiveness in schools. *Turkish Psychological Counseling and Guidance Journal*, 4(39), 120-129.

Pakrosnis, R. & Čepukienė, V. (2015). Solution- focused self- help for improving university students' well-being. *Innovations in Education and Teaching International,* 52(4), 437-447. https://doi.org/10.1080/14703297.2014.930352

Salend, S. J. (2012). Teaching students not to sweat the test. *Phi Delta Kappa*. 93(6). 20- 25.

Sarıçam, H. (2014). The effect of an intervention program based on solution-focused brief approach on rumination. Unpublished PhD Thesis, T.C. Sakarya University, Institute of Educational Sciences, Sakarya.

Sklare, B. G. (2010). Solution-Focused Short-Term Psychological Counseling for School Counselors. (Trans. Ç. M. Siyez and A. Kaya). Ankara: PegemA Publishing.

Sklare, G. B. (2021). Solution-Focused Short-Term Psychological Counseling for School Counselors. (Trans. D. M. Siyez) Ankara: Pegem Academy.

Smock, S. A., Trepper, T. S., Wetchler, J. L., McCollum, E. E., Ray, R., & Pierce, K. (2008). Solution-focused group therapy for level 1 substance abusers. *Journal of Marital and Family Therapy*, 34(1), 107-120.

Terzi, E., & Koçak, L. (2023). The effect of solution-focused short-term therapy in coping with exam anxiety: A case report. *Korkut Ata Journal of Studies in Turcology*, (12), 1569-1581. https://doi.org/10.51531/korkutataturkiyat.1340809

Turner, M. J., Evans, A. L., Fortune, G., & Chadha, N. J. (2024). "I must make the grade!": the role of cognitive appraisals, irrational beliefs, exam anxiety, and affect, in the academic self-concept of undergraduate students. *Anxiety, Stress, and Coping*, 37(6), 721–744. https://doi.org/10.1080/10615806.2024.2360732

Vermeulen-Oskam, E., Franklin, C., Van't Hof, L. P. M., Stams, G. J. J. M., van Vugt, E. S., Assink, M., Veltman, E. J., Froerer, A. S., Staaks, J. P. C., & Zhang, A. (2024). The current evidence of solution-focused brief therapy: A meta-analysis of psychosocial outcomes and moderating factors. *Clinical Psychology Review*, 114, 102512. https://doi.org/10.1016/j.cpr.2024.102512

Wahyudin, H., Ramli, M., Chusniyah, T., Eva, N., & Oktasari, M. (2024). Solution-Focused Brief Counseling: An effective strategy for reducing anxiety during school exams. *Edu Consilium: Jurnal Bimbingan dan Konseling Pendidikan Islam*, 5(1), 17-24. https://doi.org/10.19105/ec.v5i1.12262

Wand, T., Acret, L., & D'Abrew, N. (2018). Introducing solution-focussed brief therapy to mental health nurses across a local health district in Australia. *International Journal of Mental Health Nursing*, 27(2), 774–782. https://doi.org/10.1111/inm.12364.

Żak, A. M., & Pękala, K. (2024). Effectiveness of solution-focused brief therapy: An umbrella review of systematic reviews and meta-analyses. Psychotherapy research: *Journal of the Society for Psychotherapy Research*, 1–13. Advance online publication. https://doi.org/10.1080/10503307.2024.2406540

CHAPTER 5

FUNCTIONAL MEDICINE AND NURSING

Funda SOFULU[1]

Functional Medicine

The current health care system faces significant challenges. Despite advancements in modern medicine, the prevalence of many chronic health conditions is increasing, with six in 10 adults having arthritis, high blood pressure, or diabetes (*Centers for Disease Control and Prevention (CDC)*, 2024). Functional Medicine provides a new operating system for 21st-century medicine. Functional Medicine is a personalized, patient-centered, science-based approach. It investigates the underlying causes of the disease, works patient-centered, and offers individualized treatment models (Scheinbaum & Wagner, 2017). Functional Medicine (FT) focuses on identifying key clinical imbalances, past life history and lifestyle factors in the treatment and management of patterns of dysfunction underlying chronic diseases, and recommends care that can prevent or reverse these diseases (Jones & Quinn, 2010). It s focus is on understanding an individual's physiological, cognitive, emotional, and physical function, as well as on the design and implementation of a therapeutic program that is personalized to the functional needs of the patient (Bland, 2017).

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In 1991, the Institute for Functional Medicine was founded with 7 defining characteristics of functional medicine. These included:

1. Patient centered versus disease centered.
2. Systems biology approach: web-like interconnections of physiological factors.
3. Dynamic balance of gene-environment interactions.
4. Personalized based on biochemical individuality.
5. Promotion of organ reserve and sustained health span.
6. Health as a positive vitality—not merely the absence of disease.

Function versus pathology focused (Jones & Quinn, 2015).

Chronic disease is almost always preceded by a period of declining function in one or more of the body's systems. Restoring health requires reversing (or substantially improving) the specific dysfunctions that have contributed to the disease state (Jones & Quinn, 2015)

There are four guiding principles that are foundational to the development of the Functional Medicine model:

- Form and function are interconnected and interdependent.
- All aspects of life can be viewed through the lens of form and function.
- We live in a hologram of interconnectedness through homeodynamic relationships (not homeostatic).

The concept of functional systems is operative at every organizational level (Bland, 2017).

Functional Medicine, therefore, is a way of thinking about how to approach the complex diathesis of a patient. It is not a series of specific treatment protocols, but rather a way of applying a systems biology heuristic to "root cause"-focused health care (Hanaway, 2016).

The Functional Medicine operating system and approach build a cross-disciplinary model and provide effective clinical tools to prevent, treat, and reverse complex chronic disease (Hanaway, 2016).

Evidence-Based Functional Medicine

The Functional Medicine model has been developed and implemented as an evidence-based approach to the management and evaluation of outcomes of patients with complex chronic disease (Bland, 2019). Recently, the influence of functional medicine in the management of chronic diseases by patients has been increasing (Jones et al., 2009). Research suggests that a combination of genetic, environmental, and lifestyle factors contributes to disease, and to be successful treatment must address the underlying causes. İn recent years, there has been a greater shift toward implementing holistic practices that align with the functional medicine approach in every type of health care setting (IFM, 2020).

A recent review highlighted the benefits of the Functional Medicine approach in improving outcome in patients with Type 2 diabetes. This report indicated that the application of the Functional Medicine model in these patients resulted in improved response to specific medications such as SGLT-2 inhibitors and GLP-1 receptor agonists, as well as overall better outcomes (Valencia et al., 2018). In a study of patients with Hashimoto's thyroiditis, it was found that the Functional Medicine Autoimmune Protocol resulted in directional improvement in subjective symptoms based upon PROMIS outcome variables, and a decrease in high sensitivity C-reactive protein and white blood cell count was also noted (Abbott et al., 2019).

Cutshall, Bergstrom, and Kalish (2016) conducted a 28-week pilot study to evaluate the effectiveness of a functional medicine approach to improve stress, energy, fatigue, digestive issues, and quality of life in women ages 30-55, and found significant improvements in measures of stress, fatigue, and quality of life. Fatigue scores decreased by 31% and stress scores decreased by 27%. There was a significant improvement in helicobacter pylori infections in women in the program, with nine participants testing positive at the beginning of the study and only one remaining positive by the end of the study (Cutshall et al., 2016) .

Functional Medicine Coaching Academy provided functional medicine health coaching to 38 people with an average age of 45 for seven months in 2018. The results of the study showed that medical symptoms were significantly reduced, self-reported physical and mental health increased, and skills were gained in two psychological health areas (environmental management and self-acceptance) in the results of

the Functional Medicine Symptom Assessment questionnaire reported by the individual (Cook & Scheinbaum, 2018). A functional medicine-based nurse coaching initiative was implemented for individuals with inflammatory bowel disease in 2022. In the results of research, it was ensured that symptom management, self-care activities and quality of life were increased in individuals with inflammatory bowel disease by determining lifestyle factors on the basis of functional medicine, defining their needs, training them with individualized care with nurse coaching (Sofulu, 2022).

Functional Medicine in Nursing

According to recent studies, nurses make up the largest portion of health care professionals and spend the most time with patients, and nursing continues to be voted the most ethical and trustworthy profession (Megan & Jeffrey, 2024). Nurses can bridge the gap between patients and the traditional health care system, promoting the integration of patient-centered care, holistic approaches, and root cause analysis. Nurses have a multifaceted role in functional medicine. Embracing functional medicine enhances patient-centered nursing practice across like bedside nursing, clinic-based nursing, school nursing, and home health care. Functional medicine is a patient-centered approach that seeks to address the underlying causes of disease rather than focusing on managing the symptoms.

Functional medicine aligns seamlessly with holistic nursing philosophy, and at its core functional medicine truly is holistic nursing care. It is the provision of care that considers the patient as a whole and acknowledges the interconnectedness of the physical, emotional, mental, and spiritual aspects of a unique individual's well-being. Therefore, a nurse may be practicing holistically in any nursing role they choose when their methods include considering all aspects of a patient's health, including environment, way of life, and personal beliefs, in addition to the physical symptoms of an illness. Nurses typically learn many aspects of holistic nursing in their initial nursing training, but our current health care system often relegates nurses to task-oriented, fast-paced clinical roles (Sager, 2024).

Nurses can help patients make informed decisions in line with functional medicine principles by explaining to patients the importance of factors such as nutrition, stress management, physical activity,

exercise, social relationships and sleep. Nurses contribute to developing a partnership between patients and healthcare providers through patient education and empowerment. nurses can appropriately align their ability to practice holistically, within a functional medicine team.

Many studies involving nursing practice with a holistic approach show that patient-centered interventions are key components in improving quality of life, increasing self-care skills, and activating behavior change by increasing patient participation in self-management (Jiang et al., 2018; Morales-Fernandez et al., 2016; Suñol & Somekh, 2014).

The patient-centered and holistic approach of functional medicine must be successfully incorporated into care strategies. There is increasing evidence that the holistic approach of functional medicine can address deficiencies in the current health care system while improving patients' physical and mental well-being.

References

Abbott, R. D., Sadowski, A., & Alt, A. G. (2019). Efficacy of the Autoimmune Protocol Diet as Part of a Multi-disciplinary, Supported Lifestyle Intervention for Hashimoto's Thyroiditis. *Cureus*, *11*(4). https://doi.org/10.7759/CUREUS.4556

Bland, J. (2017). Defining Function in the Functional Medicine Model CREATING SYNTHESIS. In *Integrative Medicine* • (Vol. 16, Issue 1).

Bland, J. S. (2019). What is Evidence-Based Functional Medicine in the 21st Century? *Integrative Medicine: A Clinician's Journal*, *18*(3), 14. https://pmc.ncbi.nlm.nih.gov/articles/PMC7217393/

Centers for Disease Control and Prevention (CDC). (2024). *Living with a Chronic Condition | Chronic Disease | CDC*. https://www.cdc.gov/chronic-disease/living-with/index.html

Cook, A., & Scheinbaum, S. (2018). Practice Brief: Functional Medicine Health Coaching: A Path to Positive Health. *International Positive Psychology Association –*, *1*(1).

Cutshall, S. M., Bergstrom, L. R., & Kalish, D. J. (2016). Evaluation of a functional medicine approach to treating fatigue, stress, and digestive issues in women. *Complementary Therapies in Clinical Practice*, *23*, 75–81. https://doi.org/10.1016/j.ctcp.2016.03.005

Hanaway, P. (2016). Form Follows Function: A Functional Medicine Overview. *The Permanente Journal*, *20*(4), 125–126. https://doi.org/10.7812/TPP/16-109

IFM. (2020). *IFM-Annual-Report-2020-2021.pdf*. https://functionalmedicine.widen.net/s/jz5tkdjkln/ifm-annual-report-2020-2021

Jiang, Y., Shorey, S., Seah, B., Chan, W. X., Tam, W. W. S., & Wang, W. (2018). The effectiveness of psychological interventions on self-care, psychological and health outcomes in patients with chronic heart failure—A systematic review and meta-analysis. In *International Journal of Nursing Studies* (Vol. 78, pp. 16–25). Elsevier Ltd. https://doi.org/10.1016/j.ijnurstu.2017.08.006

Jones, D., Hofmann, L., & Quinn, S. (2009). *21st century medicine: A New Model for Medical Education and Practice-*.

Jones, D., & Quinn, S. (2010). *Textbook of Functional Medicine.*

Jones, D. S., & Quinn, S. (2015). *Introduction to Functional Medicine*.

Megan, B., & Jeffrey, M. (2024, February 22). *Ethics Ratings of Nearly All Professions Down in U.S.* https://news.gallup.com/poll/608903/ethics-ratings-nearly-professions-down.aspx

Morales-Fernandez, A., Morales-Asencio, J. M., Canca-Sanchez, J. C., Moreno-Martin, G., Vergara-Romero, M., Ortigosa, I. G., Portillo, C. C., Ronda, A. G., Martín, J. M. J., & Bandera, A. M. M. (2016). Impact on quality of life of a nursing intervention programme for patients with chronic non-cancer pain: An open, randomized controlled parallel study protocol. *Journal of Advanced Nursing*, *72*(5), 1182–1190. https://doi.org/10.1111/jan.12908

Sager, B. (2024). Functional Medicine in Nursing. *American Journal of Nursing*, *124*(10), 32–40. https://doi.org/10.1097/01.NAJ.0001063812.69063.B1

Scheinbaum, S., & Wagner, E. (2017). *Functional Medicine Coaching* (Vol. 1, Issue 1).

Sofulu, F. (2022). *İnflamatuar bağırsak hastalığı olan bireylerde fonksiyonel sağlıkta hemşire koçluğunun semptom yönetimi, öz bakım aktiviteleri ve yaşam kalitesi üzerine etkisi* . Ege Üniversitesi .

Suñol, R., & Somekh, D. (2014). *EMPATHiE Empowering patients in the management of chronic diseases Fınal Summary Report Contract Number: 2013 62 01*.

Valencia, W. M., Botros, D., Vera-Nunez, M., & Dang, S. (2018). Diabetes Treatment in the Elderly: Incorporating Geriatrics, Technology, and Functional Medicine. *Current Diabetes Reports*, *18*(10). https://doi.org/10.1007/S11892-018-1052-Y